

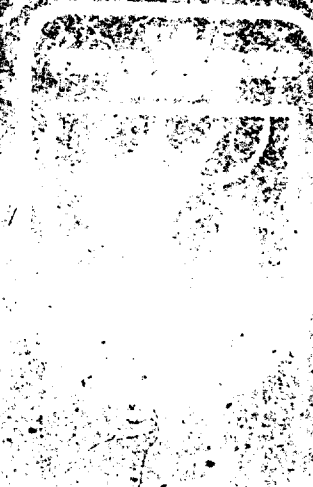
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13. ABSTRACT (Maximum 200 words)  The number of environmental laws and regulations have continued to grow in the United States and worldwide, making compliance with these regulations increasingly difficult. Environmental assessments became a way to determine compliance with current environmental regulations. The Fish and Wildlife Service has adopted an environmental compliance program that identifies compliance problems before they are cited as violations by the U.S. Environmental Protection Agency (USEPA).  Beginning in 1993, the U.S. Army Construction Engineering Research Laboratories (USACERL), in cooperation with the Fish and Wildlife Service, began research on the Environmental Compliance Assessment and Management Program (ECAMP). The concept was to combine Code of Federal Regulations (CFRs) along with good management practices and risk-management issues, into a series of checklists that show legal requirements and which specific items or operations to review.  The handbook was tested in 1993 at the Aransas National Wildlife Refuge and the Uvalde Fish Hatchery. Additional testing was done in 1994 at the Crab Orchard National Refuge.  The handbook is continually updated to address new environmental compliance laws and regulations.				
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## FOREWORD

This research was performed for the Fish and Wildlife Service (FWS), Service Pollution Control Office (SPCO), under order number 1448000993, Environmental Compliance Handbook, dated 28 February 1994. The FWS technical monitor was Billy Umsted, FWS-SPCO.

The research was performed by the Environmental Compliance Modeling and Systems Division (EC) of the Environmental Sustainment Laboratory (EL), U.S. Army Construction Engineering Research Laboratories (USACERL). The Principal Investigator was Donna J. Schell, Environmental Protocol Team, CECER-ECP. Tina M. Hurt, CECER-ECP, was Associate Investigator. Dr. Diane K. Mann, CECER-ECP is Acting Team Leader. Dr. John T. Bandy is Chief, CECER-EC, and William D. Goran is Chief, CECER-EL.

LTC David J. Rehbein is Commander and Acting Director, USACERL. Dr. Michael J. O'Connor is Technical Director.

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## NOTICE

This handbook is intended as general guidance for personnel at FWS facilities. It is not, nor is it intended to be, a complete treatise on environmental laws and regulations. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information contained herein. For any specific questions about, or interpretations of, the legal references herein, consult appropriate counsel.

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## **ENVIRONMENTAL COMPLIANCE ASSESSMENT AND MANAGEMENT PROGRAM BACKGROUND**

The Environmental Compliance Assessment and Management Program (ECAMP) handbook as developed by USACERL to simplify the environmental evaluation process for the Fish and Wildlife Service (FWS). The objectives of the ECAMP program are to:

1. establish a FWS-wide standards for environmental compliance assessments as a means of ensuring the Services's observance of all applicable environmental laws and regulations
2. assure Regional Directors and environmental program managers that environmental programs are effectively addressing environmental problems that could
  - a. impact FWS mission effectiveness
  - b. jeopardize the health of Service personnel or the general public
  - c. significantly degrade the environment
  - d. expose the FWS to avoidable financial liabilities as a result of noncompliance with environmental requirements
  - e. erode public confidence in the FWS and the U.S. Department of the Interior (DOI)
  - f. expose individuals to civil and criminal liability
3. secure information that will permit FWS Managers to anticipate and prevent future environmental problems
4. provide data for use in identifying, validating, prioritizing, programing, and budgeting environmental requirements.

Any change or suggestion for improving this guidance handbook should be forwarded to Billy Umsted at the FWS, Service Pollution Control Office (SPCO), in Lakewood, CO.

The information in this handbook applies to all FWS facilities in the United States and its territories. The contents of this handbook are up-to-date as of 12 May 1994.



## **HANDBOOK OBJECTIVES AND ORGANIZATION**

The contents of this handbook are based on Federal environmental regulations and are to be supplemented locally using state and local environmental regulations that are applicable to FWS facilities and are more stringent than Federal regulations included in this handbook. This handbook, with local supplements, is intended to serve as the primary tool in conducting an environmental compliance assessment. Specifically, this handbook:

1. Compiles with applicable Federal and FWS environmental regulations applicable to FWS operations and activities. (NOTE: Due to extensive revisions currently taking place, FWS manuals have not been included in this document but will be included in the next version.)
2. Synthesizes environmental regulations, good management practices (GMPs), and risk management issues into consistent and easy to use checklist.
3. Serves as an aid in the assessment process and management action development phases of the ECAMP.

This handbook is divided into 10 sections (assessment areas). They are:

- Air Emissions Management
- Drinking Water Management
- Hazardous Materials Management
- Hazardous Waste Management
- Pesticide Management
- Petroleum, Oil, and Lubricant (POL) Management
- Solid Waste Management
- Special Pollutants Management (includes asbestos, PCBs, radon, and noise)
- Underground Storage Tank (UST) Management
- Wastewater Management.





## **ENVIRONMENTAL COMPLIANCE ASSESSMENT PROCESS**

The environmental assessment process can be divided into three distinct phases:

1. pre-assessment activities
2. site assessment activities
3. post assessment activities.

This handbook incorporates the first two phases of the program management process.

**Pre-assessment Activities** - Five key activities should be completed before an assessment team begins the assessment activities.

1. **Previsit Questionnaire.** The purpose of the previsit questionnaire is to collect information that will familiarize the assessment team with the facility and its operations so that they are able to review the applicable regulations and prepare a detailed assessment schedule. The previsit questionnaire is an essential part of pre-assessment activities for an external assessment. It is also an excellent tool for ensuring internal assessment team members are starting from the same base of information. Table 1 contains a sample previsit environmental management questionnaire (see page number xxxv). Once the activities that occur at a facility are known, Table 2, a logic table (see page number xlix) can be used to identify potentially applicable handbook sections (see page xlix). Table 2 indicates the major environmental operations and activities at a typical FWS facility and the handbook sections within which they are addressed. As shown, many activities and operations cause environmental impacts in more than one area, and are therefore addressed in more than one section.
2. **Define Assessment Scope and Team Responsibilities.** The facility or FWS may wish to place special emphasis on certain sections or to review additional areas not covered in the handbook. These goals must be stated clearly so the assessment can be planned properly. Additionally, the duration of the assessment, appointment of team members, handling of tenants and off-facility sites must be addressed. Finally, responsibilities for each of the sections must be assigned to team members as appropriate.
3. **Review Relevant Regulations.** Once the assessment scope and responsibilities are known, the assessors should undertake a thorough review of relevant Federal, state, and local regulations affecting the facility. The applicable environmental regulations must be determined before assessment begins. If not already available, checklist items for state and local requirements must be added to the checklists in the assessment handbook.
4. **Develop Assessment Schedule.** The team should develop a detailed assessment schedule that includes the activities planned for each day.

5. **Review Assessment Sections.** Each assessor should know the regulatory requirements, schedule, and should be familiar with the assessment checklists that will be used.

**Site Assessment Activities** - Onsite, the assessors will conduct record searches, interviews, and site surveys to determine the compliance status of the facility. Operations are compared with environmental standards and any deficiencies are written up as findings. The data collected should be sufficient, reliable, and relevant to provide a sound basis for assessment findings and recommendations. A Finding Summary form is available to assist assessors in compiling needed information during an assessment. A Finding Summary form should be completed for each finding during the assessment. These forms comprise the basis of the assessment report. The format and content for assessment reports will be in a separate supplement. Figure 1 (see page xiii) shows a blank sample Finding Summary form. Figure 2 (see page xv) shows a sample completed Finding Summary form.

All items of the Finding Summary form must be filled in up to Sampling Results for negative findings and up to Criteria for positive findings. The **CONDITION** is a factual statement describing the status of the process, permit, or situation under investigation, and the **CRITERIA** is the environmental standard (Federal, state, local, FWS, Good Management Practice) the facility is being measured against. A condition may be positive if the facility is going above and beyond the requirements. **SUGGESTED SOLUTIONS** is an optional entry, and may include easily identifiable solutions to the deficiency. **COMMENTS** may include any corrective actions already taken or scheduled, or any other appropriate information pertaining to the finding. Once completed, a finding has to be ranked for the severity of noncompliance. The ranking options are explained on the back of the Finding Summary.

For example, a team member assigned to evaluate the facilities' hazardous waste management program, which is a small quantity generator (SQG), visited the facility's hazardous waste storage area. The assessor noticed some drums were damaged and took a count of the total number of drums and the number of damaged drums to get an accurate description for the finding. Five of the eight drums were rusted and bulging. Checklist item 4-27 in the FWS handbook states that 40 CFR 262.34(d)(2) and 265.171 requires containers to not be leaking, bulging, rusting, or badly dented. The damaged drums were behind the others, so the accumulation point manager may have overlooked them during the regular inspections. The accumulation point manager immediately put overpack drums on order. The assessor is now ready to fill out a Finding Summary (see Figure 2).

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements for protecting the environment. A negative finding is when there is an issue of noncompliance or a poor management practice.

A copy of the Finding Summary sheets is to be left at the facility by the assessment team. Any finding discovered through the use of this guidance handbook by the internal assessment must be validated by the designated FWS representative.

**Post-Assessment Activities** - The assessment team is required to produce a Draft findings report within 30 days after the completion of the assessment according to the following format.

1. Section One: This contains an executive summary identifying where the assessment was done, what was assessed, and a list of the members of the assessment team. It also provides background information on the site.
2. Section Two. This is an overview of the ECAMP objectives.
3. Section Three. This section contains the details on the regulatory compliance status of the assessed facility. An explanation of the finding ratings is provided along with a compliance summary table. The core of this section is a reproduction of the finalized draft regulatory findings.
4. Section Four. This section contains the management practice findings that were identified during the assessment.

The Draft findings report is sent to the facility and another copy is sent to the SPCO. Upon receipt of the report, the facility has 60 days to develop a reply to each of the regulatory findings (Section Three). A reply can be as simple as "situation corrected on 30 June 1994," "work order request submitted on 30 May 1994 for construction of cement pad," or "plan is scheduled to undergo review and updating in August of 1994." The facility is required to develop a corrective action for every regulatory finding. The facility is not required to respond to the management practice findings in Section Four but it is strongly urged to do so. If the facility has received a "Significant" finding, this finding will be forwarded to the Directorate level. Other reports without significant findings will be signed at the Division level.

Preliminary replies to the findings will be sent back to the original assessment team for incorporation into a final report within 30 days of their receipt. If a reply/corrective action is not appropriate to the finding, the assessment team will contact the facility and develop an alternative plan. Three copies of the final report will be sent to the SPCO which will forward a copy to the facility and the responsible Region.

The Regional Compliance Coordinator will participate in the tracking of progress on corrective actions. The facility will submit a report to the Region 6 mo after the finalization of the report detailing the status of the corrective actions. Reporting will continue every 6 mo until corrective actions are completed.



Figure 1

## FINDING SUMMARY

Handbook Edition Date: \_\_\_\_\_

### INDIVIDUAL FINDING SHEET

(To provide detailed information for use by assessment team only)

<b>MANDATORY ENTRIES</b>	
Section (Air, Hazardous Materials, etc.): _____ Question Number: _____	
Type of Finding (Positive or Negative): _____ Building number or location: _____	
<b>FINDING CATEGORY</b> (circle one):    Significant    Major    Minor    Good Management Practice	
Basis of finding (Citation or Regulation): _____ (Reference applicable Federal, state, and local regulations) _____	
<b>CONDITION</b> (What did you find?) _____ _____ _____	
<b>CRITERIA</b> (What is the actual requirement?) _____ _____ _____	
<b>SAMPLING RESULTS</b> (mandatory only if sampling was used): Universe: _____ Sample Size: _____ Number of Discrepancies: _____ Percentage of Discrepancies: _____	
Is this a repeat finding (NOV, etc)? _____	
<b>PREPARED BY:DATE:</b>	

### SUGGESTED SOLUTION(s):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### OPTIONAL ENTRIES

#### COMMENTS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Explanation of Ratings

Deficiencies noted on the Finding Summary are rated as follows:

**Significant:** A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facilities' mission. A leaking PCB transformer that is located next to a dining facility, for example, would likely be a significant deficiency.

**Major:** A major deficiency requires action, but not necessarily immediate action. Major deficiencies may pose a threat to human health, safety, or the environment. Any immediate threat, however, must be categorized as significant.

**Minor:** Minor deficiencies are usually administrative in nature, even though those findings might possibly result in a notice of violation. This category may also include temporary or occasional instances of noncompliance.

**Good Management Practice:** Good management practice items are those for which there is no specific regulatory requirement.

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements for protecting the environment. A negative finding is when there is an issue of noncompliance or a poor management practice.

**Figure 2**

**FINDING SUMMARY**

**Handbook Edition Date:** \_\_\_\_\_

**INDIVIDUAL FINDING SHEET**

(To provide detailed information for use by assessment team only)

**MANDATORY ENTRIES**

Section (Air, Hazardous Materials, etc.): \_\_\_\_\_ Question Number: \_\_\_\_\_

Type of Finding (Positive or Negative): \_\_\_\_\_ Building number or location: \_\_\_\_\_

**FINDING CATEGORY** (circle one):    Significant    Major    Minor    Good Management Practice

Basis of finding (Citation or Regulation): \_\_\_\_\_  
(Reference applicable Federal, state, and local regulations) \_\_\_\_\_

**CONDITION** (What did you find?)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CRITERIA** (What is the actual requirement?)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SAMPLING RESULTS** (mandatory only if sampling was used):

Universe: \_\_\_\_\_ Sample Size: \_\_\_\_\_  
Number of Discrepancies: \_\_\_\_\_ Percentage of Discrepancies: \_\_\_\_\_

Is this a repeat finding (NOV, etc)? \_\_\_\_\_

**PREPARED BY:DATE:**

**SUGGESTED SOLUTION(s):**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**OPTIONAL ENTRIES**

**COMMENTS:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## Explanation of Ratings

Deficiencies noted on the Finding Summary are rated as follows:

**Significant:** A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the facilities' mission. A leaking PCB transformer that is located next to a dining facility, for example, would likely be a significant deficiency.

**Major:** A major deficiency requires action, but not necessarily immediate action. Major deficiencies may pose a threat to human health, safety, or the environment. Any immediate threat, however, must be categorized as significant.

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**Good Management Practice:** Good management practice items are those for which there is no specific regulatory requirement.

A finding may be positive or negative. A positive finding is for a job, activity, or person who has gone above and beyond the regulatory requirements for protecting the environment. A negative finding is when there is an issue of noncompliance or a poor management practice.

## **ORGANIZATION OF THE HANDBOOK**

FWS facilities engage in many operations and activities that can cause environmental impacts on public health and the environment if not controlled or properly managed. Many of these activities and operations are regulated by Federal, state, and local regulations, and by FWS regulations/policies.

After a review of these activities at FWS facilities, it is apparent that there are major categories of environmental compliance into which most environmental regulations and FWS activities could be grouped. This handbook is divided into 10 sections that correspond to major compliance categories.

1. Air Emissions Management
2. Drinking Water Quality
3. Hazardous Materials Management
4. Hazardous Waste Management
5. Pesticide Management
6. Petroleum, Oil, and Lubricant (POL) Management
7. Solid Waste Management
8. Special Pollutants Management (includes asbestos, PCBs, radon, and noise)
9. Underground Storage Tank (UST) Management
10. Wastewater Management

Each section is organized in the following format:

- A. Applicability.** This provides guidance on the major activities and operations included in the section and a brief description of the major application.
- B. Federal Legislation.** This identifies, in summary form, the key legislative issues associated with the compliance area in the Federal law.
- C. State/Local Requirement.** This identifies the "typical" compliance areas normally addressed in state and local regulations. This section does not present individual state/local requirements. An assessment of state and local requirements must be conducted and supplemental questions prepared to cover these requirements. The handbook is prepared in loose leaf form to allow state and local requirements to be easily inserted. Checklist item 3 in each section lists issues that are typically regulated by the states.
- D. Key Compliance Requirements.** This summarizes the significant compliance requirements associated with the regulations included in the checklist. It is a brief abstract summarizing the overall thrust of the regulations for that particular compliance category.

- E. Key Compliance Definitions.** This presents definitions taken from the Code of Federal Regulations (CFRs) for those key terms associated with each compliance category.
- F. Compliance Assessment Checklists.** The final portion of each section and its tables and figures contain checklists composed of requirements or guidelines that serve as indicators to point out possible compliance problems, as well as practices, conditions, and situations that could indicate potential problems. They are intended to focus attention on the key compliance questions and issues that should be investigated. Instructions are provided to direct the assessor to the appropriate action, references, or activity that corresponds to the specific requirement or guide.

## USING THE CHECKLISTS

Understanding the layout and structure of the checklists facilitates their use during the assessment. Please see Table 3 (see page number liii) for a sample of a portion of a checklist.

- **Explanation of Layout/Content.** The checklist portion of assessment section is divided into two columns. The first of these is a statement of a requirement. This may be a strict regulatory requirement, in which case the citation is given, or it may be a requirement that is considered to be a good management practice to maintain compliance, but which is not specifically mandated by regulation. The second column gives instructions to help conduct the compliance assessment. These instructions are intended to be specific action items that should be accomplished by the investigator. Some of the instructions may be a simple documentation check taking a few minutes; others may require physical inspection of a facility. In an effort to simplify using the checklists, measurements which were not converted into a metric or English equivalent in the regulations have been converted by USACERL. Conversions done by USACERL appear in [ ]'s while conversions provided in the regulations appear in ( )'s.
- **Worksheet.** At the end of each section is an assessment worksheet. This worksheet should be reproduced and used during the assessment to take notes. It is designed to be inserted between each page of the checklists, allowing the main text to be kept usable for the next assessment. The worksheet is divided into two columns. The first column is a quick check for those items that are in compliance (C), not applicable (N/A) to the facility being reviewed, or require management action (RMA). The second column on the worksheet allows for more detailed notations or comments. These notations will provide a record for use in preparing the final report. These notations should include both situations of substandard operation needing attention and those operations that are above requirements or provide examples of good programs. For future reference and clarity, it is essential that the building number (or other reference to location) be made during the review.
- **Standard Checklist Items.** The first five checklist items in each section of the handbook are standardized. The first item requires a review of any previous assessment documents. The second suggests a list of documents that the facility should have in order to maintain compliance. The third requires a review of state and local regulations as well as indicating issues commonly regulated at the state and local level. The fourth item provides a place for assessors to write up findings that are based on regulations that have been promulgated since the publication of the handbook or regulations not included in the handbook. The fifth item suggests that copies of notices of violation (NOVs) be forwarded to the Region and the SPCO. Table 3 provides an example of these five checklist items as found in the section titled Solid Waste Management.

The assessment procedures are designed as an aid and should not be considered exhaustive. Use of the checklist requires the assessor's judgement to play a role in determining the focus and extent of further investigation. A review of appropriate state regulations should be conducted so additional review questions that reflect the substantive requirements of state/local regulations pertinent to individual facilities can be included in the checklists.

Supplemental information to aid the assessor and the facility in the assessment process and the compliance process is included in the following pages.

## **COMMON FINDINGS OF NONCOMPLIANCE AT FWS FACILITIES**

### **A. HATCHERIES**

#### **Air Quality**

- Repairing chlorofluorocarbon (CFC)-containing apparatus' without recycling/reclaiming.

#### **Drinking Water Management**

- Incomplete or no records of testing of drinking water.

#### **Hazardous Materials Management**

- No written Hazardous Communication Program
- Incomplete file of Material Safety Data Sheets (MSDSs)
- No list of hazardous materials or copies of MSDSs submitted to the local emergency response committee or local fire department
- Unlabeled drums and containers
- Lack of correct signs on storage areas
- Storage of flammable/combustible materials in cabinets or storage buildings that do not meet regulatory criteria
- Compressed gas cylinders stored without being chained or restrained in another manner.

#### **Hazardous Waste Management**

- Unusable hazardous materials stored with usable hazardous materials when they need to be disposed of as hazardous waste
- Containers of unknown substances stored at facilities.

#### **Pesticide Management**

- Equipment used for the application of pesticides not clearly identified as such.

#### **Petroleum, Oil, and Lubricant (POL) Management**

- No Spill Prevention Control and Countermeasure (SPCC) Plan
- No spill equipment or containment to prevent petroleum product spills from entering waterways
- No secondary containment for aboveground storage tanks (ASTs) of greater than 660 gal.

### **Solid Waste Management**

- Trash piled up in an unauthorized dump site
- No recycling program
- Abandoned landfill sites.

### **Special Pollutants Management**

- Personnel repairing water pipes that are asbestos containing without accredited training.
- The facility is unaware as to whether or not transformers at the site are polychlorinated biphenyl (PCB)-contaminated.

### **Underground Storage Tank (UST) Management**

- No records of release detection monitoring
- No drawings, schematics, or information as to the type of UST at the facility
- USTs abandoned without correct closure.

### **Wastewater Management**

- No National or State Pollution Discharge Elimination System (NPDES/SPDES) Permit for discharge of wastewater.

## **B. REFUGES**

### **Air Quality**

- Repairing CFC containing apparatus' without recycling/reclaiming.
- Operation of small incinerators without state approval.

### **Drinking Water Management**

- Incomplete or no records of testing of drinking water.

### **Hazardous Materials Management**

- No written Hazardous Communication Program
- Incomplete file of Material Safety Data Sheets (MSDSs)
- No list of hazardous materials or copies of MSDSs submitted to the local emergency response committee or local fire department
- Unlabeled drums and containers
- Lack of correct signs on storage areas.

### **Hazardous Waste Management**

- Unusable hazardous materials being stored with usable hazardous materials when they need to be disposed of a hazardous waste
- Unknown substances being stored onsite.

### **Pesticide Management**

- Equipment used for the application of pesticides is not clearly marked as such
- No records are kept of the applications of pesticides.

### **Petroleum, Oils, and Lubricants Management**

- No SPCC Plan
- No spill equipment or containment to prevent petroleum product spills from entering waterways
- Unlabeled containerize of used oil
- ASTs of greater than 660 gal do not have secondary containment.

### **Solid Waste Management**

- Trash piled up in an unauthorized dump site
- No recycling program
- Solid waste containers without lids on.

### **Special Pollutants Management**

- The facility is unaware as to whether or not transformers at the site are PCB contaminated.

### **Underground Storage Tank (UST) Management**

- No records of release detection monitoring
- No drawings, schematics, or information as to the type of UST at the facility
- USTs abandoned without correct closure.

### **Wastewater Management**

- No application for stormwater runoff permit
- No NPDES/SPDES permit.





## Glossary of Acronyms

AAR	annual application rate
ACM	asbestos-containing material
ANSI	American National Standards Institute
API	American Petroleum Institute
AQCR	Air Quality Control Region
ARI	Air Conditioning and Refrigeration Institute
ASME	American Society of Mechanical Engineers
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
BAT	best available technology
Btu	British thermal unit
C	compliance
CAA	<i>Clean Air Act</i>
CAMU	Corrective Action Management Unit
CAP	Corrective Action Plan
CAS	Chemical Abstract Service
CEMS	Continuous Emissions Monitoring System
CEQ	Council on Environmental Quality
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act</i>
CESQG	conditionally exempt small quantity generator
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
CT	residual disinfectant concentration (C in CT calculation)
CWA	<i>Clean Water Act</i>
DIY	do-it-yourself
DOI	Department of the Interior
DOT	Department of Transportation
EA	environmental assessment
ECAMP	Environmental Compliance Assessment Management Program
EIS	environmental impact statement
EO	Executive Order
EPA	Environmental Protection Agency

### Glossary of Acronyms (continued)

EPCRA	<i>Emergency Planning and Community Right-to-Know Act</i>
ESA	<i>Endangered Species Act</i>
FFCA	<i>Federal Facilities Compliance Act</i>
FIFRA	<i>Federal Insecticide, Fungicide, and Rodenticide Act.</i>
FOTW	Federally owned treatment works
FNSI	finding of no significant impact
FR	Federal Register
FUDS	formally used defense sites
FWCA	<i>Fish and Wildlife Conservation Act</i>
FWS	Fish and Wildlife Service
FY	fiscal year
GOTP	gamma glutamyl transpeptidase
GMP	good management practice
HCFC	hydrogenated chlorofluorocarbons
HCL	hydrochloric acid
HOC	halogenated organic compounds
HPC	heterotrophic plate count
HTRW	hazardous, toxic, and radioactive waste
ID	identification
IOPP	International Oil Pollution Prevention
LDR	land disposal restriction
LPG	liquid petroleum gas
MBtu	Million British thermal units
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MDL	maximum detection level
MOU	memorandum of understanding
MPN	most probable number
MSDS	material safety data sheet
MSWLF	municipal solid waste landfill
MVAC	motor vehicle air conditioning
MWC	municipal waste combustor
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NACE	National Association of Corrosion Engineers
NEPA	<i>National Environmental Policy Act</i>

### Glossary of Acronyms (continued)

NFPA	National Fire Protection Association
NHPA	<i>National Historic Preservation Act</i>
NIOSH	National Institute of Occupational Safety and Health
NLS	noxious liquid substance
NOI	notice of intent
NOV	notice of violation
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NSPS	new source performance standards
O&M	operations and maintenance
ODA	<i>Ocean Dumping Act</i>
OHSPC	Oil and Hazardous Substances Pollution Contingency Plan
OMB	Office of Management and Budget
OPA	<i>Oil Pollution Act</i>
OSC	On-Scene Coordinator
OSHA	<i>Occupational Safety and Health Act</i>
PCB	polychlorinated biphenyl
PL	Public Law
POC	point of contact
POHC	principle organic hazardous constituent
POL	petroleum, oil, and lubricant
POTW	publicly owned treatment work
PSD	prevention of significant deterioration
PSES	pretreatment standards for existing sources
PSNS	pretreatment standards for new indirect sources
QA	quality assurance
RACM	regulated asbestos-containing material
RCRA	<i>Resource Conservation and Recovery Act</i>
RMA	requires management action
RQ	reportable quantity
RSPA	Research and Special Programs Administration
SARA	<i>Superfund Amendments and Reauthorization Act</i>

### Glossary of Acronyms (continued)

SDWA	<i>Safe Drinking Water Act</i>
SGOT	serum glutamic oxaloacetic transaminase
SGPT	serum glutamic pyuvic transaminase
SIP	State Implementation Plan
SOI	Secretary of the Interior
SOP	standard operating procedure
SOUR	specific oxygen uptake rate
SPCC	Spill Prevention Control and Countermeasure Plan
SPCO	Service Pollution Control Office
SPDES	State Pollution Discharge Elimination System
SQG	small quantity generator
STP	sewage treatment plant
SWMU	solid waste management unit
TCLP	toxicity characteristics leaching procedure
THM	trihalomethanes
TTHM	total trihalomethanes
TNT	ammonia nitrate explosive
TPQ	threshold planning quantity
TTO	total toxic organics
TSCA	<i>Toxic Substances Control Act</i>
TSDF	treatment, storage, or disposal facility
TU	temporary unit
UIC	underground injection control
UL	Underwriter's Laboratory
USACERL	U.S. Army Construction Engineering Research Laboratories
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VHAP	volatile hazardous air pollutant
VOC	volatile organic compound
VOL	volatile organic liquid

## Commonly Used Abbreviations

bbl	barrel	μg	microgram
C	Celsius	μm	micrometer
cm	centimeter	min	minute
cm <sup>2</sup>	square centimeter	MJ	Megajoule
F	Fahrenheit	mo	month
ft	foot	mm	millimeter
ft <sup>2</sup>	square feet	mrem	millirem
ft <sup>3</sup>	cubic feet	MW	Megawatt
g	gram	ng	nanogram
gal	gallon	NTU	nephelometric turbidity unit
gJ	gigajoule	oz	ounce
h	hour	pCi	picoCurie
hp	horsepower	ppm	part per million
in.	inch	psi	pound per square inch
J	Joule	psia	pounds per square inch absolute
kg	kilogram	psig	pounds per square inch gauge
km	kilometer	s	second
kPa	kilopascals	scf	standard cubic foot
L	Liter	scm	standard cubic meter
lb	pound	V	volt
m	meter	yd	yard
m <sup>3</sup>	cubic meter	yd <sup>2</sup>	square yard
mg	milligram	yr	year
mi	mile		

### Chemicals

CO	carbon monoxide	NO <sub>2</sub>	nitrogen dioxide
CO <sub>2</sub>	carbon dioxide	NO <sub>x</sub>	nitrogen oxides
Hg	mercury	SO <sub>2</sub>	sulfur dioxide



## USEPA POINTS OF CONTACT

### Region 1 (CT, ME, MA, NH, RI, VT)

Environmental Protection Agency  
John F. Kennedy Federal Bldg.  
Room 2203  
Boston, MA 022-3  
(617) 565-3715

### Region 6 (AK, LA, NM, OK, TX)

Environmental Protection Agency  
First Interstate Bank Tower at Fountain  
Place  
1445 Ross Ave, Suite 1200  
Dallas, TX 75202  
(214) 655-2100

### Region 2 (NJ, NY, Puerto Rico, Virgin Islands)

Environmental Protection Agency  
26 Federal Plaza, Room 906  
New York, NY 10278  
(212) 264-2525

### Region 7 (IA, KS, MO, NB)

Environmental Protection Agency  
726 Minnesota Ave  
Kansas City, MO 66401  
(913) 551-7006

### Region 3 (DC, DE, MD, PA, VA, WV)

Environmental Protection Agency  
841 Chestnut St.  
Philadelphia, PA  
(215) 597-9800

### Region 8 (CO, MT, ND, SD, UT, WY)

Environmental Protection Agency  
999 18th St, Suite 500  
Denver, CO 80202  
(303) 293-1603

### Region 4 (AL, FL, GA, KY, MS, MC, SC, TN)

Environmental Protection Agency  
345 Courtland St. N.E.  
Atlanta, GA, 30365  
(404) 347-4727

### Region 9 (AZ, CA, HI, NV, American Samoa, Guam, Trust Territories of the Pacific)

Environmental Protection Agency  
75 Hawthorne St.  
San Francisco, CA 94105  
(415) 556-6322

### Region 5 (IL, IN, MI, MN, OH, WI)

Environmental Protection Agency  
230 S. Dearborn St  
Chicago, IL 60604  
(312) 353-2000

### Region 10 (AK, ID, OR, WA)

Environmental Protection Agency  
1200 Sixth Ave  
Seattle, WA 98101  
(206) 402-5810





## **ENVIRONMENTAL INFORMATION HOTLINES**

- Air Risk Hotline** 919-541-0888  
Information on health, exposure, and risk assessment with regard to toxic air pollutants.
- Bureau of Explosives Hotline** 202-639-2222  
Offers assistance in hazardous materials incidents involving railroads and is often contacted through CHEMTREC.
- Cancer Information Service Hotline** 800-422-6237  
Provides information on cancer risk and referrals to proper sources for local support services.
- CHEMTREC Hotline** 800-424-9300  
The Chemical Transportation Emergency Center will identify unknown chemicals, advise on response methods and procedures for chemicals and situations, provide help in contacting shippers/carriers/manufacturers/product response teams.
- Consumer Product Safety Commission** 800-638-2772  
Information on consumer safety and guidelines on what to do if you come in contact with formaldehyde, asbestos, lime, and air pollutants. Also provides product recall information.
- Control Technology Center for Air Toxics** 919-541-0800  
Provides information to state and local pollution control agencies or sources of emissions of air toxics.
- Department of Transportation Hotline** 202-366-4488  
Information assistance pertaining to Federal regulations for transportation of hazardous materials, CFR 49.
- Emergency Plan and Community Right-To-Know Hotline, EPA** 800-535-0202  
EPA Title III requirements information.
- Environmental Defense Fund Recycling Hotline** 212-505-2100  
Recycling information and locations.
- Environmental Protection Agency** 900-245-4505  
Agency for vendors treating groundwater, soil, sludge, sediments, and solid waste.
- Florida Center for Solid & Hazardous Waste Management** 800-348-1239  
An electronic bulletin board for recyclers.
- Florida Leak Reporting Hotline** 904-488-3935  
For timely reporting of release of petroleum products into the soil (72 h).
- National Pesticide Telecommunications Network Hotline** 800-858-7378  
Information regarding all aspects of pesticide handling.
- Plastics Recyclers Information Line** 800-243-5790  
Information regarding plastic recycling locations according to area.

### Environmental Information Hotlines (continued)

<b>Poison Control Center (National Capital)</b>	202-626-3333
Provides info on exposure to chemicals, poisons, or drugs.	
<b>Public Information Hotline, USEPA</b>	202-260-2080
Will answer inquiries from the public about USEPA and offers a variety of general, non-technical information materials.	
<b>RCRA/Superfund, USEPA</b>	800-231-3075
Right-to-know information for California, Arizona, Hawaii, and Nevada.	
<b>RCRA/Superfund/UST Hotline</b>	800-424-9346
Answers questions concerning RCRA, Superfund, USTs, and hazardous waste.	
<b>Safe Drinking Water Hotline</b>	800-426-4791
Information on policy and regulations regarding public water supply programs.	
<b>Small Business and Asbestos Ombudsman's Office, USEPA</b>	800-368-5888
Information on pollution prevention and recycling.	
<b>Stratosphere Ozone Hotline, USEPA</b>	800-296-1996
Information on ozone protection regs and requirements under Title VI of the Clean Air Act Amendments of 1990 and other general aspects of stratosphere ozone depletion/protection.	
<b>Superfund Site Cleanup</b>	800-533-3508
For questions on status of Superfund sites within Region VI	
<b>Superfund Technical Information</b>	800-346-5009
Superfund message center allowing caller to leave messages	
<b>Toxic Substances (Asbestos)</b>	800-462-6706
Information on funding for asbestos cleanup projects.	
<b>Toxic Substance Control Act (TSCA) Hotline</b>	202-554-1404
Information on TSCA and Asbestos Technical Information and Referral	
<b>Hazardous Materials and Oil Spills, USEPA</b>	800-424-8802
National Response Center in the advent of hazardous materials spills	
<b>Waste Reduction Assistance Program OER (FL)</b>	904-488-0300
Advice, information, and counseling services for pollution prevention.	
<b>Wetlands Protection Hotline, USEPA</b>	800-832-7828
Information regarding values of wetlands and efforts for wetlands protection.	
<b>Whistle Blower Hotline, USEPA</b>	800-424-4000
Allows for reporting of fraud, waste, and abuse in USEPA programs.	

**Table 1**

**PREVISIT ENVIRONMENTAL MANAGEMENT QUESTIONNAIRE**

Please fill out this questionnaire as completely as possible. It will provide background information necessary to plan and conduct an environmental compliance assessment at the facility.

**Name of Facility:** \_\_\_\_\_

**Location/State:** \_\_\_\_\_

**Region:** \_\_\_\_\_

**Organizational Code:** \_\_\_\_\_

**Point of Contact:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_

**Date Completed:** \_\_\_\_\_

**QUESTION/DESCRIPTION**

**RESPONSE**

**REFERENCE**

**Section 1. Air Emissions Management**

1. Does the facility operate a fuel burner (central steam plant, or hot water steam boiler)? \_\_\_\_\_

If YES, see checklist item 1-3, 1-6 through 1-9

If YES, how large and what fuel is used?

Size

Fuel

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Does the facility operate an incinerator? \_\_\_\_\_

If YES, see checklist item 1-3

How large? \_\_\_\_\_

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

3. Does the facility dispense, store, or transfer gasoline?

\_\_\_\_\_

If YES, see  
checklist item  
1-10 through  
1-15

Type: \_\_\_\_\_

4. Does the facility use any VOC based solvent degreasers?

\_\_\_\_\_

If YES, see  
checklist item  
1-3

5. Does the facility procure/use CFCs or halon substances?

\_\_\_\_\_

If YES, see  
checklist item  
1-20 and 1-23

6. Does the facility repair any units containing refrigerant?

\_\_\_\_\_

If YES, see  
checklist item  
1-21 through  
1-40

7. Does the facility recycle/reclaim CFCs or halon?

\_\_\_\_\_

If YES, see  
checklist item  
1-21 through  
1-40

**Section 2. Drinking Water Management**

1. Does the facility purchase its drinking water from a nearby  
municipalities water system?

\_\_\_\_\_

If YES, see  
checklist item  
2-3

2. Does the facility treat and distribute its own drinking water?

\_\_\_\_\_

If YES, see  
checklist item  
2-6 through 2-  
56

3. Does the facility store and distribute its own drinking water?

\_\_\_\_\_

If YES, see  
checklist item  
2-6 through 2-  
56

4. Does the facility draw water from its own well?

\_\_\_\_\_

If YES, see  
checklist item  
2-3

5. Has the facility been classified as a community water system?

\_\_\_\_\_

If YES, see  
checklist item  
2-10 through  
2-56

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

6. Has the facility been classified as a noncommunity, nontransient water system?

\_\_\_\_\_

If YES, see checklist item 2-11 through 2-56

7. Does the facility perform contaminant monitoring on its water supply?

\_\_\_\_\_

If YES, see checklist item 2-13 through 2-32

8. Does the facility provide disinfection/filtration for water?

\_\_\_\_\_

If YES, see checklist item 2-33 through 2-40

9. Is the facility located near a sole source aquifer?

\_\_\_\_\_

If YES, see checklist item 2-57

**Section 3. Hazardous Materials Management:**

1. Does the facility store any hazardous materials such as paints, solvents, and/or pesticides?

\_\_\_\_\_

If YES, see checklist item 3-1 through 3-49

2. Have there been any spills or releases of hazardous substances at the facility?

\_\_\_\_\_

If YES, see checklist item 3-3, 3-21 through 3-25

3. Are there any extremely hazardous substance at the facility?

\_\_\_\_\_

If YES, see checklist item 3-26 through 3-29

4. Does the facility operate a laboratory?

\_\_\_\_\_

If YES, see checklist item 3-17 through 3-20

5. Does the facility store any flammable/combustible liquids (i.e., paints, solvents) in lockers, storage sheds, tanks, or industrial areas?

\_\_\_\_\_

If YES, see checklist item 3-30 through 3-46

6. Does the facility store compressed gases?

\_\_\_\_\_

If YES, see checklist item 3-47 through 3-48

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

7. Does the facility store acids?

\_\_\_\_\_

If YES, see  
checklist item  
3-49

8. Does the facility transport or offer for transport hazardous materials?

\_\_\_\_\_

If YES, see  
checklist item  
3-50 through  
3-56

**Section 4. Hazardous Waste Management**

1. Is the facility a generator of hazardous waste?

\_\_\_\_\_

If YES, see  
checklist item  
4-10 through  
4-15

2. Does the facility generate less than 100 kg [220.46 lb] of hazardous waste in 1 mo?

\_\_\_\_\_

If YES, see  
checklist item  
4-16 through  
4-19

3. Does the facility generate more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb] of hazardous waste in 1 mo?

\_\_\_\_\_

If YES, see  
checklist item  
4-20 through  
4-44

4. Does the facility generate more than 1000 kg [2204.62 lb] of hazardous waste in 1 mo?

\_\_\_\_\_

If YES, see  
checklist item  
4-45 through  
4-91

**QUESTION/DESCRIPTION****RESPONSE      REFERENCE**

(NOTE: Any waste which is not excepted, which is listed in 40 CFR 261, or which exhibits the following characteristics is a hazardous waste:

- Ignitability (flash point <140 F) or
- Corrosivity (pH < 2 or > 12.5) or
- TCLP Toxicity (for As, Ba, Cd, Cr, Pb, Hg, Se, Ag, and selected pesticides or)
- Reactive (or CN).)

The following are hazardous wastes that may typically be found at a facility (check if used at this facility and indicate amount used):

- solvents \_\_\_\_\_  
(This include trichloroethane, methylene, chloride, tetrachloroethylene, 1,1,1 trichloroethane, carbon tetrachloride, chlorinated fluorocarbons, toluene, MEK, mineral spirits, xylene)
- liquid paint \_\_\_\_\_
- paint stripper, remover or thinner \_\_\_\_\_
- spray paint booth air filters \_\_\_\_\_
- pesticides, insecticides, herbicides \_\_\_\_\_



**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

- super tropical bleach \_\_\_\_\_
- mercury \_\_\_\_\_
- ordnance, ammunition, explosives and residues \_\_\_\_\_
- battery acid and caustics in unserviceable batteries \_\_\_\_\_
- pharmaceuticals \_\_\_\_\_
- POL tank farm fuel system filters \_\_\_\_\_
- de-icing solution \_\_\_\_\_
- printing ink, ink solvents, and cleaners \_\_\_\_\_
- absorbent material and soil contaminated with hazardous waste \_\_\_\_\_
- waste oil (some state consider this a hazardous waste) \_\_\_\_\_
- other \_\_\_\_\_
- other \_\_\_\_\_
- other \_\_\_\_\_

5. Does the facility transport hazardous waste? \_\_\_\_\_

If YES, see  
checklist item  
4-92 through  
4-96

6. Is the facility considered an interim status treatment, storage, and disposal facility? \_\_\_\_\_

If YES, see  
checklist item  
4-220  
through 4-253

7. Is the facility considered a permitted treatment, storage, and disposal facility (Part B permit)? \_\_\_\_\_

If YES, see  
checklist item  
4-174  
through 4-219

8. Does the facility use surface impoundments as a means of treatment, storage, or disposal for hazardous waste? \_\_\_\_\_

If YES, see  
checklist item  
4-165

9. Does the facility have hazardous waste piles?  
(An example of a waste pile is a pile of contaminated dirt) \_\_\_\_\_

If YES, see  
checklist item  
4-166

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

- |   |       |  |
|---|-------|--|
| 10. Does the facility perform land treatment of hazardous waste?  | _____ | If YES, see checklist item 4-167               |
| 11. Does the facility have a hazardous waste landfill?  | _____ | If YES, see checklist item 4-168               |
| 12. Does the facility incinerate hazardous waste?   | _____ | If YES, see checklist item 4-243 through 4-247 |
| 13. Does the facility dispose of hazardous waste in miscellaneous units (this include the OB/OD of ordnance)? | _____ | If YES, see checklist item 4-217 through 4-219 |
| 14. Does the facility operate a thermal treatment facility for hazardous wastes?                              | _____ | If YES, see checklist item 4-248 through 4-250 |
| 15. Does the facility operate chemical, physical, or biological treatment facilities for hazardous waste?     | _____ | If YES, see checklist item 4-251 through 4-253 |

**Section 5. Pesticide Management**

- |   |       |  |
|---|-------|--|
| 1. Do facility personnel engage in the application of pesticides?   | _____ | If YES, see checklist item 5-3, 5-9 through 5-14   |
| 2. Does the facility use contractor personnel to apply pesticides?  | _____ | If YES, see checklist item 5-3, 5-9 through 5-14   |
| 3. Does the facility store, mix, or formulate pesticides?   | _____ | If YES, see checklist item 5-15 through 5-21, 5-30 |
| 4. Does the facility store/use pesticides that are labeled DANGER, WARNING, POISON, or with the skull and crossbones? | _____ | If YES, see checklist item 5-22 through 5-29       |

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

5. Does the facility apply agricultural pesticides?

If YES, see  
checklist item  
5-31 and 5-32

6. Does the facility dispose of pesticides?

If YES, see  
checklist item  
5-33 through  
5-38

**Section 6. Petroleum, Oil, and Lubricant (POL) Management**

1. Does the facility have a Spill Prevention Control and Counter-measure (SPCC) Plan?

If YES, see  
checklist item  
6-10 through  
6-18

2. Have there been any discharges or spills of petroleum products at the facility?

If YES, see  
checklist item  
6-19 and 6-20

3. Does the facility have any aboveground POL storage tanks that are over 660 gal?

If YES, see  
checklist item  
6-25

4. Does the facility have any pipelines?

If YES, see  
checklist item  
6-26 through  
6-36

5. Does the facility generate/store used oil?

If YES, see  
checklist item  
6-42 through  
6-52

**Section 7. Solid Waste Management**

1. Does the facility collect or store solid waste onsite?

If YES, see  
checklist item  
7-7 through 7-  
14

2. Does the facility contract out the collection of its solid waste?

If YES, see  
checklist item  
7-6

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

3. Does the facility recycle anything?

\_\_\_\_\_

If YES, see  
checklist item  
7-15 through  
7-18

If YES, which of the following is recycled:

Paper

Glass

Beverage cans

Cardboard

Other? \_\_\_\_\_

4. Does the facility have more than 100 office workers?

\_\_\_\_\_

If YES, see  
checklist item  
7-16

5. Does the facility have any dumps/land disposal sites on the property other than a municipal solid waste landfill?

\_\_\_\_\_

If YES, see  
checklist item  
7-19 through  
7-46

6. Does the facility dispose of water treatment plant sludges onsite?

\_\_\_\_\_

If YES, see  
checklist item  
7-21

7. Does the facility dispose of incinerator or air pollution control residue onsite?

\_\_\_\_\_

If YES, see  
checklist item  
7-22

8. Does the facility have a previously closed landfill?

\_\_\_\_\_

If YES, see  
checklist item  
7-43

If YES, when was it closed? \_\_\_\_\_

9. Does the facility have a construction debris landfill currently operating?

\_\_\_\_\_

If YES, see  
checklist item

10. Is the facility planning or operating a new landfill?

\_\_\_\_\_

If YES, see  
checklist item  
7-44 through  
7-46

11. Does the facility handle or dispose of medical waste such as needles, bloody wastes, pathogenic waste, etc.?

\_\_\_\_\_

If YES, see  
checklist item  
7-87 through  
7-92

12. Does the facility incinerate or dispose of animal carcasses?

If YES, see  
checklist item  
7-90

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE****Section 8. Special Pollutants Management**

1. Does the facility have any equipment which contains PCBS? \_\_\_\_\_

If YES, indicate which of the following are at the facility:

- Transformers
- Capacitors
- Circuit Breakers
- Electromagnets
- Switches
- Heat transfer systems
- Voltage regulators
- Reclosers
- Light ballasts
- Other \_\_\_\_\_

If YES, see  
checklist item  
8-6 through 8-  
10

2. Does the facility use PCBs in research? \_\_\_\_\_

If YES, see  
checklist item  
8-31

3. Has the facility had a PCB spill? \_\_\_\_\_

If YES, see  
checklist item  
8-24 through  
8-26

4. Does the facility store PCBs? \_\_\_\_\_

If YES, see  
checklist item  
8-32 through  
8-37

5. Does the facility transport items containing PCBs? \_\_\_\_\_

If YES, see  
checklist item  
8-38 and 8-39

6. Does the facility dispose of PCBs? or PCB Items? \_\_\_\_\_

If YES, see  
checklist item  
8-40 through  
8-51

7. Has the facility surveyed its buildings for asbestos? \_\_\_\_\_

If YES, see  
checklist item  
8-52

8. Does the facility have personnel that remove asbestos, perform maintenance work on asbestos covered structures, pipes, or insulation? \_\_\_\_\_

If YES, see  
checklist item  
8-74 and 8-75

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

- |   |       |  |
|---|-------|--|
| 9. Have structures at the facility which contain asbestos undergone, or are currently undergoing, renovation, stripping, or demolition? | _____ | If YES, see checklist item 8-53 through 8-62 |
| 10. Do facility personnel transport asbestos-containing waste?  | _____ | If YES, see checklist item 8-3               |
| 11. Does the facility dispose of asbestos-containing waste onsite?  | _____ | If YES, see checklist item 8-63 through 8-66 |
| 12. Has the facility conducted a radon survey of its buildings?   | _____ | If YES, see checklist item 8-77 through 8-80 |
| 13. Does the facility have any possible source of environmental noise pollution or a noise hazardous area?                              | _____ | If YES, see checklist item 8-81              |

**Section 9. Underground Storage Tank (UST) Management**

- |  |       |  |
|--|-------|--|
| 1. Does the facility have any USTs which it is in the process of replacing or upgrading? | _____ | If YES, see checklist item 9-7               |
| 2. Has the facility installed any new USTs (after May 1986)?                             | _____ | If YES, see checklist item 9-8 through 9-11  |
| 3. Does the facility repair USTs?  | _____ | If YES, see checklist item 9-16 and 9-17     |
| 4. Does the facility have petroleum USTs?  | _____ | If YES, see checklist item 9-19              |
| 5. Does the facility store hazardous substances other than petroleum in USTs?            | _____ | If YES, see checklist item 9-20 and 9-21     |
| If YES, what is being stored? _____  |       |  |
| 6. Have any of the facility USTs been closed?  | _____ | If YES, see checklist item 9-33 through 9-39 |

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

7. Have any of the facility USTs undergone a change in service?

\_\_\_\_\_

If YES, see  
checklist item  
9-34, 9-36  
and 9-37

**Section 10. Wastewater Management**

1. Does the facility have any point source discharges?

\_\_\_\_\_

If YES, see  
checklist item  
10-6

2. Does the facility have a NPDES/SPDES permit?

\_\_\_\_\_

If YES, see  
checklist item  
10-6 through  
10-11

3. Does the facility have stormwater discharge not covered by a permit?

\_\_\_\_\_

If YES, see  
checklist item  
10-7

4. Does the facility discharge to a local wastewater treatment plant?

\_\_\_\_\_

If YES, see  
checklist item  
10-12

5. Does the facility operate its own wastewater treatment plant?

\_\_\_\_\_

If YES, see  
checklist item  
10-15

6. Has the facility had any pretreatment standards imposed upon it by the local wastewater treatment plant?

\_\_\_\_\_

If YES, see  
checklist item  
10-13

7. Does the facility operate any steam electric power generating sources?

\_\_\_\_\_

If YES, see  
checklist item  
10-18  
through 10-30

8. Does the facility operate any metal finishing point sources?

\_\_\_\_\_

If YES, see  
checklist item  
10-38  
through 10-43

9. Does the facility operate any electroplating operations?

\_\_\_\_\_

If YES, see  
checklist item  
10-31  
through 10-37

10. Does the facility operate any washracks?

\_\_\_\_\_

If YES, see  
checklist item  
10-3 and 10-  
13

If YES, do they discharge to a wastewater treatment  
works? \_\_\_\_\_

**QUESTION/DESCRIPTION****RESPONSE****REFERENCE**

11. Does the facility operate any oil/water separators? \_\_\_\_\_

If YES, do they discharge to a wastewater treatment works? \_\_\_\_\_

If YES, see checklist item 10-3 and 10-13

12. Does the facility do the land application of sludge? \_\_\_\_\_

If YES, see checklist item 10-44 through 10-67

13. Does the facility do land disposal of sludge? \_\_\_\_\_

If YES, see checklist item 10-71 through 10-83

14. Does the facility incinerate sludge? \_\_\_\_\_

If YES, see checklist item 10-84 through 10-91

Signature of individual completing this form: \_\_\_\_\_

Date completed: \_\_\_\_\_





### **Additional Information**

**ATTENTION:** The following records should be available for review by the assessment team either prior to the assessment or immediately upon arrival at the facility.

(NOTE: Not all facilities will have, or are even required to have, all of the following documents.)

#### **General**

1. Copies of NOV's issued to the facility in any of these areas.

#### **Air Emissions Management**

1. Air emissions inventory
2. All air related permits
3. A list of steam generating units and boilers and their size, fuel used, and locations.

#### **Drinking Water Management**

1. Copies of drinking water test results
2. Copies of reports to the state.

#### **Hazardous Materials Management.**

1. A list of hazardous material storage/use areas
2. A waste minimization plan
3. MSDSs
4. Documentation of personnel training
5. The Oil and Hazardous Substances Pollution Contingency (OHSPC) Plan
6. A copy of any reports of spills
7. Copies of the Tier I or Tier II reports
8. Documentation on contaminated sites.

#### **Hazardous Waste Management**

1. The Hazardous Waste Management Plan
2. A list of hazardous wastes generated at the facility
3. A list of waste generation/storage areas
4. USEPA identification number
5. Manifests
6. Any permits
7. The biennial report
8. Personnel training records.

**Pesticides Management**

1. The Pesticide Management Plan
2. A list of pesticide storage sites
3. Application records
4. MSDSs for pesticides
5. Personnel Certifications for applicators
6. Contracts for pesticide application.

**POL Management**

1. The SPCC plan
2. A list of POL storage areas.

**Solid Waste Management**

1. Any contracts with waste haulers
2. Any recycling plans
3. All documentation pertaining to landfill operation or closure
4. Records on groundwater sampling resulting from monitoring wells.

**Special Pollutants Management**

1. The PCB inventory
2. The PCB annual report
3. The results of the asbestos survey
4. The Asbestos Management Plan
5. Noise complaints
6. Radon survey results.

**Underground Storage Tank (USTs) Management**

1. Upgrading and/or closure plans
2. A list of all USTs and their locations
3. Release detection documentation
4. Integrity test results
5. Site contamination reports after tank removals.

**Wastewater Management**

1. All NPDES/SPDES permits
2. Maps of the storm, sanitary, and industrial sewers
3. A copy of pretreatment standards imposed on the facility
4. A list of maintenance shops/operations to include wash facilities
5. Locations of holding ponds, sedimentation pits, and open/end of-pipe discharge points.

**Table 2**

<b>Major Activities at FWS Facilities and Their Related Sections</b>			
<b>Facilities</b>	<b>Sections</b>		
	<b>1 Air Emissions Management</b>	<b>2 Drinking Water Quality</b>	<b>3 Hazardous Materials Management</b>
1. Incinerators	•		
2. Heat/Power Production	•		
3. Fuel Storage	•		•
4. Sanitary Wastewater		•	
5. Stormwater Runoff			
6. Sludge Disposal			
7. POL Dispensing	•		
8. Wastewater Treatment			
9. Vehicle Maintenance	•		•
10. Shop Activities	•		•
11. Solid Waste Generation	•		•
12. Water Supply		•	•
13. Hazardous Materials Use		•	•
14. Firefighting Training	•		•
15. PCB Electrical Equipment			
16. Pesticide/Herbicide Use			•
17. Environmental Noise			
18. Emergency Planning			•
19. Asbestos Removal			
20. Underground Storage Tanks			
21. Remodeling Activities			
22. Construction Activities	•		•
23. Soil Removal	•		
24. Laboratories		•	•
25. Unexploded Ordnance			•
26. Medical Waste			•
27. Livestock Management	•		

(continued)

**Table 2 (continued)**

<b>Major Activities at FWS Facilities and Their Related Sections</b>			
<b>Facilities</b>	<b>Sections</b>		
	<b>4 Hazardous Waste Management</b>	<b>5 Pesticide Management</b>	<b>6 POL Management</b>
1. Incinerators	.		
2. Heat/Power Production			.
3. Fuel Storage			.
4. Sanitary Wastewater		.	
5. Stormwater Runoff			
6. Sludge Disposal	.		
7. POL Dispensing			.
8. Wastewater Treatment	.		
9. Vehicle Maintenance	.		.
10. Shop Activities	.		.
11. Solid Waste Generation			
12. Water Supply			
13. Hazardous Materials Use		.	
14. Firefighting Training			.
15. PCB Electrical Equipment			
16. Pesticide/Herbicide Use		.	
17. Environmental Noise			
18. Emergency Planning	.	.	.
19. Asbestos Removal			
20. Underground Storage Tanks			
21. Remodeling Activities			
22. Construction Activities			
23. Soil Removal			
24. Laboratories	.	.	.
25. Unexploded Ordnance	.		
26. Medical Waste			
27. Livestock Management		.	

(continued)

**Table 2 (continued)**

<b>Major Activities at FWS Facilities and Their Related Sections</b>				
<b>Facilities</b>	<b>Sections</b>			
	<b>7 Solid Waste Management</b>	<b>8 Special Pollutants Management</b>	<b>9 UST Management</b>	<b>10 Wastewater Management</b>
1. Incinerators	•			
2. Heat/Power Production	•			•
3. Fuel Storage			•	
4. Sanitary Wastewater				•
5. Stormwater Runoff				•
6. Sludge Disposal	•			•
7. POL Dispensing			•	
8. Wastewater Treatment	•			•
9. Vehicle Maintenance	•		•	•
10. Shop Activities	•		•	•
11. Solid Waste Generation	•			
12. Water Supply				
13. Hazardous Materials Use				
14. Firefighting Training			•	•
15. PCB Electrical Equipment		•		
16. Pesticide/Herbicide Use				•
17. Environmental Noise		•		
18. Emergency Planning				
19. Asbestos Removal		•		
20. Underground Storage Tanks			•	
21. Remodeling Activities		•		
22. Construction Activities				
23. Soil Removal				
24. Laboratories	•			•
25. Unexploded Ordnance	•			
26. Medical Waste	•			
27. Livestock Management	•			•



**Table 3: Sample Checklist  
SOLID WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL FACILITIES</b></p> <p><b>7-1.</b> Actions or changes since previous review of solid waste management should be examined (GMP).</p> <p><b>7-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on solid waste management should be available at the facility (GMP).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>Verify that copies of the following regulations are available and kept current:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards.</i></li> <li>- 7 CFR 330, <i>Federal Plant Pest Regulations, General, Plant Pests, Soil, Stone and Quarry Products, Garbage.</i></li> <li>- 29 CFR 1910.1030, <i>Bloodborne Pathogens.</i></li> <li>- 40 CFR 240, <i>Guidelines for the Thermal Processing of Solid Waste.</i></li> <li>- 40 CFR 241, <i>Guidelines for the Land Disposal of Solid Wastes.</i></li> <li>- 40 CFR 243, <i>Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste.</i></li> <li>- 40 CFR 245, <i>Promulgation Resource Recovery Facility Guidelines.</i></li> <li>- 40 CFR 246, <i>Source Separation for Materials Recovery Guidelines.</i></li> <li>- 40 CFR 258, <i>Criteria for Municipal Solid Waste Landfills.</i></li> </ul> <p>(NOTE: A consolidated listing of approved test methods should also be maintained at the facility. (<i>Test Methods for Evaluating Solid Waste, Physical/Chemical Methods</i>, USEPA Publication SW-846, Document # PB87-120-291).)</p>



**Table 3: Sample Checklist  
SOLID WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-3. FWS facilities are required to comply with state and local solid waste regulations (EO 12088, Section 1-1).</b></p>	<p>Verify that the facility is abiding by state and local solid waste requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- license or permit requirements for existing onsite landfills</li> <li>- requirements for filing a closure plan for onsite landfills specifying monitoring and inspection procedures</li> <li>- design and operation specifications for solid waste receptacles</li> <li>- disposal of solid waste offsite only at licensed or permitted facilities</li> <li>- design and policy procedures of thermal processing of solid waste</li> <li>- analysis for hazardous properties of ash residues and sludge from air pollution control devices at coal-fired facility heating plant operations before sale or disposal</li> <li>- handling and disposal of medical, pathological, and infectious waste</li> <li>- recycling requirements</li> <li>- disposal of household wastes</li> <li>- yard waste</li> <li>- disposal of used tires.)</li> </ul>
<p><b>7-4. Facilities will meet regulatory requirements issued since the finalization of the manual (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</b></p>	<p>Determine if any new regulations concerning solid waste have been issued since the finalization of the manual.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p><b>7-5. FWS Facilities should report all notices of violation (NOVs) to the Region and the SPCO (GMP).</b></p>	<p>Determine if the facility has received an NOV relating to solid waste.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>

## **SECTION 1**

### **Air Emissions Management**

<b>A. Applicability</b>	<b>1</b>
<b>B. Federal Legislation</b>	<b>1</b>
<b>C. State/Local Regulations</b>	<b>2</b>
<b>D. Key Compliance Requirements</b>	<b>3</b>
<b>E. Key Compliance Definitions</b>	<b>4</b>
<b>GUIDANCE FOR CHECKLIST USERS</b>	<b>11</b>

**The contents of this section are the minimum requirements the assessor must review. The assessor must also review applicable state and local regulations.**

## SECTION 1

### AIR EMISSIONS MANAGEMENT

#### A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with air pollution emissions from equipment and vehicles. The major sources of air pollution emissions include:

- Particulates, SO<sub>2</sub>, NO<sub>x</sub>, and CO from fuel burning at steam and hot water generation plants and boilers.
- Particulates and toxic air emissions from the operation of hazardous waste, general waste, classified material, and medical, pathological, and/or infectious waste incinerators.
- Particulates, CO, metals, and toxic air pollutant emissions from open burning and open detonation operations.
- The emission of volatile organic compound (VOC) vapors from the storage and transfer of certain petroleum fuels and chemicals (solvents), and the operation of degreasers and other processes (paint stripping and metal finishing) that use solvents.
- The emission of CO from vehicles operated on the facility.
- Fugitive particulate emissions from training activities and construction/demolition operations.

Most facilities have air emissions sources in one or more of these categories. Therefore this section is applicable to some extent at all facilities.

#### B. Federal Legislation

- *The Clean Air Act (CAA) Amendments of 1990.* This Act, Public Law (PL) 101-549 (42 U.S. Code (USC) 7401-7671q), is currently the effective, comprehensive Federal legislation regulating the prevention and control of air pollution.

The purposes of this Act are to:

1. protect and enhance the quality of the nation's air resources so as to promote the public health and welfare and the productivity of its population
2. initiate and accelerate a national research and development program to achieve the prevention and control of air pollution
3. provide technical and financial assistance to state and local governments regarding the development and execution of their air pollution prevention and control efforts
4. encourage and assist the development and operation of regional air pollution prevention and control programs (42 USC 7401(b))

5. achieve a substantial reduction in emission of hazardous air pollutants from area sources and an equivalent reduction in the public health risks associated with such sources including a reduction of not less than 75 percent in the incidence of cancer attributable to emissions from such sources (42 USC 7412(k)(1))
6. reduce the adverse effects of acid deposition through reductions in annual emissions of SO<sub>2</sub> from 1980 emission levels, and of NO<sub>x</sub> emissions from 1980 emission levels, in the 48 contiguous states and the District of Columbia and to bring about such reductions by requiring affected sources to comply with prescribed emission limitations by specified deadlines. Limitations may be met through alternative methods of compliance provided by an emission allocation and transfer system
7. encourage energy conservation, use of renewable and clean alternative technologies, and pollution prevention as a long-range strategy, consistent with the provisions of this Act, for reducing air pollution and other adverse impacts of energy production and use (42 USC 7651(b)).

A primary goal of this Act is to encourage or otherwise promote reasonable Federal, state, and local government actions for pollution prevention (42 USC 7401(c)).

Each department, agency, and instrument of the executive, legislative, and judicial branches of the Federal Government, and each officer, agent, or employee of such a unit, must comply with, all Federal, state, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of air pollution in the same manner, and to the same extent as any nongovernment entity. This applies to (42 USC 7418(a)):

1. any requirement whether substantive or procedural (including recordkeeping, reporting, and emission)
2. any requirement to pay a fee or charge imposed by any state or local agency to defray the costs of its air pollution regulatory program
3. the exercise of any Federal, state, or local administrative authority
4. any process and sanction, whether enforced in Federal, state, or local courts, or in any other manner.

Each department, agency, or instrument of the Federal Government must not engage in, support in any way, or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan after it has been approved or passed under this Act. Any Federal agency may not approve, accept, or fund any transportation plan, program, or project unless such plan, program, or project has been found to conform to any applicable implementation plan in effect (42 USC 7506(c)(1)(2)).

### **C. State/Local Regulations**

The primary mechanisms regulating air pollutant emissions are the state or air quality control region (AQCR) regulations. These regulations will normally follow the Federal guidelines for state programs and will have many similar features. However, depending on the type and degree of air pollutant problems within the state/region, the individual regulations will vary. As an example, photochemical oxidant (ozone) problems are widespread in California and, therefore, the individual AQCRs in that state have stringent VOC emission requirements. The state of North Dakota has no such problem and, therefore, has fewer and less stringent VOC regulations.

New source performance standards (NSPSs) are established for particular pollutants in industrial categories based upon adequately demonstrated control technology. A permit is normally required for new, expanded, or modified sources of air pollutants. These permitted sources could include incinerators, boilers, and open burning activities.

Some state regulations apply directly to some facilities and operations without requiring a permit. At a minimum, state regulations should be reviewed for the following activities:

1. fugitive dust emissions
2. control of particulate emissions from the transportation of refuse or materials in open vehicles
3. certification requirements for boiler operators
4. emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators
5. open burning
6. vehicle exhaust emissions testing
7. spray painting of vehicles, buildings, and/or furniture
8. certification of vehicles transporting VOC liquids
9. paving of roads and parking lots
10. toxic air pollutants
11. operation of cold cleaners, degreasers, and open top vapor degreasers
12. vapor control requirements for fuel pumps.

#### **D. Key Compliance Requirements**

- **Steam Generating Units (2.9 MW (10 million British thermal units per hour (MBtu/h)) - 29 MW (100 MBtu/h))** - Steam generating units that started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h) are required to limit emissions of SO<sub>2</sub> and particulates. Discharge rates are to be monitored and if there is no monitoring system, fuel is required to be sampled prior to combustion. Facilities are required to submit excess emission reports for any calendar quarter in which it exceeds opacity limits. If a facility does not exceed the limits in a given year, it is required to file semiannual reports confirming this fact. Facilities required to meet SO<sub>2</sub> emission limits are also required to submit quarterly reports (40 CFR 60.40c through 60.48c).
- **Gasoline Dispensing** - Leaded gasoline shall not be introduced into any motor vehicle that is labeled UNLEADED GASOLINE ONLY, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline. Fuel pumps are required to display signs stating the type of fuel in each pump and that only unleaded gas can be introduced into labeled vehicles. The nozzles of the pumps are required to be properly sized. Depending on whether the oxygenated gas is still in the control period, or the area has an oxygenated gasoline program with a credit program, pumps dispensing oxygenated gasoline are required to be labeled. During 1992 and later high ozone seasons and regulatory control periods, gasoline shall not be sold, offered for sale, imported, dispensed, supplied, or transported that exceeds Reid vapor pressure standards in Appendix 1-1. No diesel fuel shall be distributed, transported, offered for sale, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-antraquinone and has an acetone index of at

least 40, or a maximum aromatic content of 35 volume percent and a sulfur percentage of less than 0.05 percent (40 CFR 80.22(a), 80.22(d), 80.22(e), 80.24(a)(1), 80.27(a)(2), 80.35, 80.80(d), and 80.29(a)).

- **Petroleum Storage Vessels** - Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal) but less than 246,052 L (65,000 gal), that started construction or modification after 8 March 1974 but before 19 May 1978, or with a capacity greater than 246,052 L (65,000 gal) that started construction or modification after 11 June 1973 but before 19 May 1978, are required to meet specific standards for emissions and monitoring. These standards vary depending upon whether the true vapor pressure of the petroleum liquid is greater or less than 11.1 psia. Storage vessels with a storage capacity greater than 151,416 L (40,000 gal) constructed after 18 May 1978 are required to ensure that the vessel has an external floating roof, or a fixed roof with an internal floating type cover, and a vapor recovery system (40 CFR 60.110 through 60.113 and 60.110a through 60.115a).
- **Volatile Organic Liquid (VOL) Storage Vessels** - Storage vessels for VOLs having a capacity of greater than or equal to 40 m<sup>3</sup> [10566.88 gal] or which construction, reconstruction, or modification started after 23 July 1984 are required to meet specific inspection, documentation, and notification requirement standards. These include ensuring that certain inspections are made, notifying the U.S. Environmental Protection Agency (USEPA) in advance of performing gap measurements, and providing it certain records upon request (40 CFR 60.110b through 60.115b).
- **Chlorofluorocarbons (CFCs) and Halons** - To protect the ozone, no person repairing or servicing motor vehicles for payment can service a motor vehicle air conditioner (MVAC) in any way that affects the refrigerant unless they have been trained and certified and are using approved equipment. As of 15 November 1992, no Class I or Class II substances suitable for use in motor vehicles as a refrigerant can be sold or distributed in any container that is less than 20 lb [9.07 kg] to any person unless that person is trained and certified. Facilities that sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb [9.07 kg] are required to display a sign with certain wording. The servicing of appliances containing CFCs and Halons is required to be done in a manner to prevent emissions (40 CFR 82.34(a), 82.34(b), 82.42(a) through 82.42(c), and 80.150 through 80.166).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **E. Key Compliance Definitions**

- **Annual Capacity Factor** - the ratio between the actual heat input to a steam generating unit from an individual fuel or combustion of fuels during a period of 12 consecutive calendar months and the potential heat input to the steam generating unit from all fuels, had the steam generating unit been operated for 8700 h during that 12 mo period at the maximum design heat input capacity (40 CFR 60.41c).

- **Appliance** - any device which contains and uses a Class I or Class II substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer (40 CFR 82.152(a)).
- **Approved Equipment Testing Organization** - any organization which has applied for and received approval from the Administrator pursuant to 40 CFR 82.160 (40 CFR 82.152(b)).
- **Cartridge Filter** - a discrete filter unit containing both filter paper and activated carbon that traps and removes contaminants from petroleum solvent, together with the piping and ductwork used in installing this device (40 CFR 60.621).
- **Certified Refrigerant Recovery or Recycling Equipment** - equipment certified by an approved equipment testing organization to meet the standards in 40 CFR 82.158(b) or (d), equipment certified pursuant to 40 CFR 82.36(a), or equipment manufactured before 15 November 1993, that meets the standards in 40 CFR 82.158(c), (e), or (g) (40 CFR 82.152(c)).
- **Closed-Vent System** - a system that is not open to the atmosphere and is composed of piping, connections, and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device (40 CFR 61.241).
- **Coal Refuse** - any waste products of coal mining, cleaning, and coal preparation operations (e.g., culm, gob, etc.) containing coal, matrix material, clay, and other organic and inorganic material (40 CFR 60.41a).
- **Cofired Combustor** - a unit burning municipal-type solid waste or refuse derived fuel with a nonmunicipal solid waste fuel and is subject to a Federally enforceable permit limiting the unit to combusting a fuel feed stream, 30 percent or less of the weight of which is comprised, in aggregate, of municipal-type solid waste or refuse-derived fuel as measured on a 24 h basis (40 CFR 60.51a).
- **Cogeneration Steam Generating Unit** - a steam generating unit that simultaneously produces both electrical (or mechanical) and thermal energy from the same primary energy source (40 CFR 60.41c).
- **Commercial Refrigeration** - means, for the purposes of 40 CFR 82.156(i), the refrigeration appliances utilized in the retail food and cold storage warehouse sectors. Retail food includes the refrigeration equipment found in supermarkets, convenience stores, restaurants, and other food service establishments. Cold storage includes the equipment used to store meat, produce, dairy products, and other perishable goods. All of the equipment contains large refrigerant charges, typically over 75 lb [34.02 kg] (40 CFR 82.152(d)).
- **Continuous Emissions Monitoring Systems (CEMS)** - a monitoring system for continuously measuring the emissions of a pollutant from an affected facility (40 CFR 60.51a).
- **Designated Volatility Nonattainment Area** - any area designated as being in nonattainment with the National Ambient Air Quality Standard (NAAQS) for ozone pursuant to rule making under Section 107(d)(4)(A)(ii) of the CAA (40 CFR 80.2).

- **Designated Volatility Attainment Area** - an area not designated as being in nonattainment with the NAAQS for ozone (40 CFR 80.2).
- **Diesel Fuel** - any fuel sold in any state and suitable for use in diesel motor vehicles and diesel motor vehicle engines, and which is commonly or commercially known or sold as diesel fuel (40 CFR 80.2).
- **Disposal** - the process leading to and including (40 CFR 82.152(e)):
  1. the discharge, deposit, dumping, or placing of any discarded appliance into or on any land or water
  2. the disassembly of any appliance for discharge, deposit, dumping, or placing of its discarded component parts into or on any land or water
  3. the disassembly of an appliance for reuse of its component parts.
- **Duct Burner** - a device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit (40 CFR 60.41c).
- **Emerging Technology** - any SO<sub>2</sub> control system that is not defined as a conventional technology and for which the owner or operator of the affected facility has received approval from the Administrator to operate as an emerging technology (40 CFR 60.41c).
- **Federally Enforceable** - all limitations and conditions enforceable by the Administrator, including those requirements developed pursuant to 40 CFR 60 and 61, requirements within any applicable state implementation plan, and any permit requirements established pursuant to 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24 (40 CFR 60.41b).
- **Fossil Fuel** - natural gas, petroleum, coal, and any form of solid liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat (40 CFR 60.41a).
- **Fuel Pretreatment** - a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit (40 CFR 60.41c).
- **Gasoline Carrier** - any distributor who transports or stores, or causes the transportation or storage of gasoline or diesel fuel without taking title to or otherwise having any ownership of the gasoline, and without altering either the quality or quantity of the gasoline or diesel fuel (40 CFR 80.2).
- **Gasoline Distributor** - any person who transports or stores, or causes the transportation or storage of gasoline or diesel fuel at any point between any gasoline refinery or importer's facility and any retail outlet or wholesale purchaser consumer facility (40 CFR 80.2).
- **Good Management Practice (GMP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Heat Input** - heat derived from combustion of fuel in a steam generating unit and does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust gases from other sources (40 CFR 60.41c).



- **High-Pressure Appliance** - an appliance that uses a refrigerant with a boiling point between -50 and 10 °C [-58 and 50 °F] at atmospheric pressure (29.9 in. [75.946 cm] Hg). This definition includes but is not limited to appliances using refrigerants -12, -22, -114, -500, or -502 (40 CFR 82.152(f)).
- **Industrial Process Refrigeration** - means, for the purposes of 40 CFR 82.156(i), complex customized appliances used in the chemical, pharmaceutical, petrochemical, and manufacturing industries. This sector also includes industrial ice machines and ice rinks (40 CFR 82.152(g)).
- **Low-Loss Fitting** - any device that is intended to establish a connection between hoses, appliances, or recovery or recycling machines and that is designed to close automatically or to be closed manually when disconnected, minimizing the release of refrigerant from hoses, appliances, and recovery or recycling machines (40 CFR 82.152(h)).
- **Low-Pressure Appliance** - an appliance that uses a refrigerant with a boiling point above 10 °C [50 °F] at atmospheric pressure (29.9 in. [75.946 cm] Hg). This definition includes but is not limited to equipment utilizing refrigerants -11, -113, and -123 (40 CFR 82.152(i)).
- **Major Maintenance, Service, or Repair** - any maintenance, service, or repair involving the removal of any or all of the following appliance components (40 CFR 82.152(j)):
  1. compressor
  2. condenser
  3. evaporator
  4. auxiliary heat exchanger coil.
- **Major Source** - any drycleaning facility that emits or has the potential to emit more than 9.1 Mg/yr (10 tons/yr) of perchloroethylene to the atmosphere. In lieu of measuring a facility's potential to emit perchloroethylene emissions or determining a facility's potential to emit perchloroethylene emissions, a drycleaning facility is a major source if (40 CFR 63.321):
  1. it includes only dry-to-dry machines and has a total yearly perchloroethylene consumption greater than 8000 L (2100 gal)
  2. it includes only transfer machine systems or both dry-to-dry and transfer machine systems and has a total yearly perchloroethylene consumption greater than 6800 L (1800 gal).
- **Maximum Heat Input Capacity of a Steam Generating Unit** - is determined by operating the facility at maximum capacity for 24 h and using the heat loss method described in Sections 5 and 7.3 of the American Society of Mechanical Engineers (ASME) *Power Test Codes* 4.1 (see 40 CFR 60.17(h)) no later than 180 days after initial startup of the facility and within 60 days after reaching maximum production rate at which the facility will be operated (40 CFR 60.51a).
- **Modification** - in relation to NSPS, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies except (40 CFR 60.14):
  1. maintenance, repair, and replacement which the Administrator determines to be routine for a source category
  2. an increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

3. an increase in the hours of operation
  4. use of an alternate fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, the existing facility was designed to accommodate that alternate use. A facility will be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as assessed prior to the change.
- **Motor Vehicle Air Conditioner (MVAC)** - any appliance that is an MVAC as defined in 40 CFR 82, subpart B (40 CFR 82.152(k)).
  - **MVAC-Like Appliance** - mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of a nonroad motor vehicle. This includes the air conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using HCFC-22 refrigerant (40 CFR 82.152(l)).
  - **Normally Containing a Quantity of Refrigerant** - containing the quantity of refrigerant within the appliance or appliance component when the appliance is operating with a full charge of refrigerant (40 CFR 82.152(m)).
  - **Opacity** - the degree to which emissions reduce the transmission of light and obscure view of an object in the background (40 CFR 60.2).
  - **Opening An Appliance** - any service, maintenance, or repair on an appliance that could be reasonably expected to release refrigerant from the appliance to the atmosphere unless the refrigerant were previously recovered from the appliance (40 CFR 82.152(n)).
  - **Particulate Matter Emissions** - any airborne, finely divided solid or liquid material except uncombined water, emitted to the ambient air (40 CFR 60.2).
  - **PM<sub>10</sub>** - particulate matter with an aerodynamic diameter less than or equal to a nominal 10 mm (40 CFR 58.1).
  - **Process Stub** - a length of tubing that provides access to the refrigerant inside a small appliance or room air conditioner and that can be resealed at the conclusion of repair or service (40 CFR 82.152(p)).
  - **Reclaim Refrigerant** - to reprocess refrigerant to at least the purity specified in the Air Conditioning and Refrigeration Institute (ARI) Standard 700-1988, *Specifications for Fluorocarbon Refrigerants* (Appendix A to 40 CFR 82, subpart F) and to verify this purity using the analytical methodology prescribed in the ARI Standard 700-1988. In general, reclamation involves the use of processes or procedures available only at a reprocessing or manufacturing facility (40 CFR 82.152(q)).
  - **Reclaimer** - a machine used to remove perchloroethylene from articles by tumbling them in a heated air stream (40 CFR 63.321).
  - **Recover Refrigerant** - to remove refrigerant in any condition from an appliance without necessarily testing or processing it in any way (40 CFR 82.152(r)).

- **Recovery Efficiency** - the percentage of refrigerant in an appliance that is recovered by a piece of recycling or recovery equipment (40 CFR 82.152(s)).
- **Recycle Refrigerant** - to extract refrigerant from an appliance and clean refrigerant for reuse without meeting all of the requirements for reclamation. In general, recycled refrigerant is refrigerant that is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter. These procedures are usually implemented at the field job site (40 CFR 82.152(t)).
- **Refrigerated Condenser** - a vapor recovery system into which an air-perchloroethylene gas-vapor stream is routed and the perchloroethylene is condensed by cooling the gas-vapor stream (40 CFR 63.321).
- **Reid Vapor Pressure** - the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids except liquefied petroleum gases as determined by the American Society for Testing and Materials, Part 17, 1973, D-323-72 (reapproved 1977) (40 CFR 60.111a).
- **Self-Contained Recovery Equipment** - refrigerant recovery or recycling equipment that is capable of removing the refrigerant from an appliance without the assistance of components contained in the appliance (40 CFR 82.152(u)).
- **Small Appliance** - any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with 5 lb [11.02 kg] or less of refrigerant (40 CFR 82.152(v)):
  1. refrigerators designed for home use
  2. freezers designed for home use
  3. room air conditioners (including window air conditioners and packaged terminal air conditioners)
  4. packaged terminal heat pumps
  5. dehumidifiers
  6. under-the-counter ice makers
  7. vending machines
  8. drinking water coolers.
- **Steam Generating Unit** - any furnace, boiler, or other device used for combusting fuel for the purpose of producing steam (including fossil fuel-fired steam generators associated with combined cycle gas turbines) nuclear steam generators are not included (40 CFR 60.41a).
- **System-Dependent Recovery Equipment** - refrigerant recovery equipment that requires the assistance of components contained in an appliance to remove the refrigerant from the appliance (40 CFR 82.152(w)).
- **Technician** - any person who performs maintenance, service, or repair that could reasonably be expected to release Class I or Class II substances from appliances into the atmosphere, including but not limited to installers, contractor employees, in-house service personnel, and in some cases, owners. Technician also means any person disposing of appliances except for small appliances (40 CFR 82.152(x)).

- *True Vapor Pressure* - the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described in American Petroleum Institute (API) Bulletin 2517, *Evaporation Loss From Floating Roof Tanks*, 1962 (40 CFR 60.111a).
- *Very High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point below - 50 °C [-58 °F] at atmospheric pressure (29.9 in. [75.95 cm] Hg). This definition includes but is not limited to equipment utilizing refrigerants -13 and -503 (40 CFR 82.152(y)).
- *Very Low Sulfur Oil* - an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without SO<sub>2</sub> emission control, has a SO<sub>2</sub> emission rate equal to or less than 215 ng/J (0.5 lb/MBtu) heat input (40 CFR 60.41b).
- *Volatile Organic Compound (VOC)* - any compound of carbon, excluding CO, CO<sub>2</sub>, carbonic acid, metallic carbides, or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR 51.100).
- *VOC Service* - in relationship to fugitive emissions, this is when a piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (40 CFR 61.241).
- *Volatile Organic Liquid (VOL)* - any organic liquid which can emit VOCs into the atmosphere except those VOLs that emit only those compounds which the Administrator has determined do not contribute appreciably to the formation of ozone. These compounds are identified in USEPA statements on ozone abatement policy for state implementation plan (SIP) revisions (40 CFR 60.111b(k)).
- *Wholesale Purchaser-Consumer* - any organization that is an ultimate consumer of gasoline or diesel fuel and which purchases or obtains gasoline or diesel fuel from a supplier for use in motor vehicles and receives delivery of that product into a storage tank of at least 550 gal [2081.98 L] capacity substantially under the control of that organization (40 CFR 80.2).

**AIR EMISSIONS MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

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	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
All Facilities	1-1 through 1-5	15
Steam Generators	1-6 through 1-9	17
Petroleum Products	1-10 through 1-15	21
POL Storage Vessels	1-16 and 1-17	25
VOL Storage Vessels	1-18 through 1-21	27
CFCs and Halons		
General	1-21 through 1-38	31
Recordkeeping	1-39 and 1-40	39

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## **AIR EMISSIONS MANAGEMENT**

### **Records to Review**

- State and local air pollution control regulations
- FWS air pollution control regulations
- Emissions inventory
- All air pollution source permits
- Plans and procedures applicable to air pollution control
- Emission monitoring records
- Opacity records
- Notices of violation (NOVs) from regulatory authorities
- Instrument calibration and maintenance records
- Reports/complaints concerning air quality
- Air Emergency Episode Plan
- State and/or Federal regulatory inspections
- Regulatory inspection reports
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action

### **Physical Features to Inspect**

- All air pollution sources (fuel burners, incinerators, VOC sources, etc.)
- Air pollution monitoring and control devices
- Air emission stacks
- Air intake vents





**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL FACILITIES</b></p> <p><b>1-1.</b> Actions or changes since previous review of air quality should be examined (GMP).</p> <p><b>1-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on air emissions should be available at the facility (GMP).</p> <p><b>1-3.</b> FWS facilities are required to comply with state and local air quality regulations (CAA, 42 USC 7418(a)).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>Verify that copies of the following regulations are available and kept current:</p> <ul style="list-style-type: none"> <li>- 40 CFR 60, <i>Standards of Performance for New Stationary Sources.</i></li> <li>- 40 CFR 61, <i>National Emission Standards for Hazardous Air Pollutants.</i></li> <li>- 40 CFR 80, <i>Regulation of Fuels and Fuel Additives.</i></li> <li>- 40 CFR 82, <i>Protection of Stratospheric Ozone.</i></li> <li>- appropriate state and local regulations.</li> </ul> <p>Verify that the facility is complying with state and local air quality requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- air pollution episode standby plans</li> <li>- permits for construction and operation of sources of emissions</li> <li>- placement of control devices on fuel burning sources</li> <li>- incinerators with less than 45 metric tons/day (50 tons/day) heat input</li> <li>- open burning and detonation</li> <li>- firefighting training</li> <li>- motor vehicle emissions and inspections</li> <li>- use of vapor control systems at gas dispensing facilities</li> <li>- transfer of fuel in tank trucks</li> <li>- solvent metal cleaners such as degreasers and cold cleaners</li> <li>- fugitive dust emissions from sources such as roads, quarries, sand and gravel pits, and construction activities</li> <li>- control of particulate emissions from woodworking shops</li> <li>- transportation of refuse or materials in open vehicles</li> <li>- emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>AIR EMISSIONS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>1-3. (continued)</b>	<ul style="list-style-type: none"> <li>- the spray painting of vehicles, buildings, and/or furniture</li> <li>- certification of vehicles transporting VOC liquids</li> <li>- certification for operators of boilers paving of roads and parking lots</li> <li>- certification for CFC replacement in vehicle air conditioning units</li> <li>- toxic air pollutants</li> <li>- indoor air pollution.)</li> </ul> <p>(NOTE: Under 42 USC 7418(c) and 7418(d) each department, agency, and instrumentality of executive, legislative, and judicial branches of the Federal Government are required to comply with valid vehicle inspection and maintenance programs. Also, all employees operating vehicles on a property or a facility over which the Federal Government has jurisdiction are required to furnish proof of compliance with applicable requirements of any valid inspection and maintenance programs.)</p>
<b>1-4. Facilities will meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</b>	<p>Determine if any new regulations concerning air quality have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<b>1-5. FWS facilities should report all NOV's to the Region and the SPCO (GMP).</b>	<p>Determine if the facility has received an NOV relating to air quality.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>STEAM GENERATORS</b></p> <p><b>1-6.</b> Steam generating units which started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h) are required to meet specific standards for emissions of SO<sub>2</sub> (40 CFR 60.40c and 60.42c).</p>	<p>Determine if the facility operates steam generating units which started construction, modification, or reconstruction after 3 June 1989 with a maximum heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h).</p> <p>Verify that facilities which combust only coal do not:</p> <ul style="list-style-type: none"> <li>- discharge into the atmosphere gases containing SO<sub>2</sub> in excess of 10 percent of the potential SO<sub>2</sub> emission rate (a 90 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of 520 ng/J (1.2 lb/MBtu) heat input.</li> </ul> <p>Verify that facilities which combust coal and use an emerging technology do not:</p> <ul style="list-style-type: none"> <li>- discharge into the atmosphere gases containing SO<sub>2</sub> in excess of 50 percent of the potential SO<sub>2</sub> emission rate (a 50 percent reduction)</li> <li>- discharge gases that contain SO<sub>2</sub> in excess of 260 ng/J (0.60 lb/MBtu) heat input.</li> </ul> <p>Verify that facilities which combust coal in combination with other fuels do not:</p> <ul style="list-style-type: none"> <li>- discharge into the atmosphere gases containing SO<sub>2</sub> in excess of 10 percent of the potential SO<sub>2</sub> emission rate (a 90 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of the emissions limit determined by the formula outlined in Appendix 1-2.</li> </ul> <p>Verify that facilities which combust coal in combination with other fuels and use emerging technology do not:</p> <ul style="list-style-type: none"> <li>- discharge gases containing SO<sub>2</sub> in excess of 50 percent of the potential SO<sub>2</sub> emission rate (a 50 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of the emission limit determined by the formula outlined in Appendix 1-2.</li> </ul> <p>Verify that facilities which combust coal refuse alone or in a fluidized bed combustion steam generating unit do not:</p> <ul style="list-style-type: none"> <li>- discharge gases containing SO<sub>2</sub> in excess of 20 percent of the potential SO<sub>2</sub> rate (an 80 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of 520 ng/J (1.2 lb/MBtu) heat input.</li> </ul>

**COMPLIANCE CATEGORY:**  
**AIR EMISSIONS MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-6. (continued)</b></p>	<p>(NOTE: If the facility combusts coal with coal refuse the standards for facilities combusting coal are required to be met.)</p> <p>Verify that facilities which fire oil, or any fuel other than coal, with coal refuse do not:</p> <ul style="list-style-type: none"> <li>- discharge into the atmosphere gases containing SO<sub>2</sub> in excess of 10 percent of the potential SO<sub>2</sub> emission rate (a 90 percent reduction)</li> <li>- discharge gases containing SO<sub>2</sub> in excess of the emissions limit determined by the formula in Appendix 1-2.</li> </ul> <p>Verify that a facility which meets one of the following criteria, and combusts coal alone or in combination with any other fuel, does not discharge SO<sub>2</sub> in excess of the emissions limit determined by the formula in Appendix 1-2:</p> <ul style="list-style-type: none"> <li>- facilities with a heat input capacity of 22 MW (75 MBtu/h) or less</li> <li>- facilities that have an annual capacity for coal of 55 percent or less</li> <li>- facilities located in noncontinental areas</li> <li>- facilities that combust coal in a duct burner as a part of a combined cycle system where 30 percent or less of the heat entering the steam generating unit is from combustion of coal in the duct burner and 70 percent or more is from exhaust gases.</li> </ul> <p>Verify that facilities which combust oil meet one of the following:</p> <ul style="list-style-type: none"> <li>- gases are not discharged that contain SO<sub>2</sub> in excess of 215 ng/J (0.50 lb/MBtu) heat input</li> <li>- no oil is combusted which contains greater than 0.5 weight percent sulfur.</li> </ul>

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-7. Steam generating units which started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h), but less than 29 MW (100 MBtu/h), are required to meet specific standards for emissions of particulates (40 CFR 60.40c and 60.43c).</b></p>	<p>Verify that facilities which combust coal or mixtures of coal with other fuels and have a heat input capacity of 8.7 MW (30 MBtu/h) or greater do not discharge particulate matter in excess of the following:</p> <ul style="list-style-type: none"> <li>- 22 ng/J (0.05 lb/MBtu) heat input if the facility combusts only coal or coal with other fuels and has an annual capacity factor for the other fuels of 10 percent</li> <li>- 43 ng/J (0.10 lb/MBtu) heat input if the facility combusts coal with other fuels, has an annual capacity factor greater than 10 percent for the other fuels.</li> </ul> <p>Verify that facilities which combust wood or mixtures of wood with other fuels, except coal, and have a heat input capacity of 30 MBtu/h or greater do not discharge particulate matter in excess of the following:</p> <ul style="list-style-type: none"> <li>- 43 ng/J (0.10 lb/MBtu) heat input if the facility has an annual capacity factor for wood greater than 30 percent</li> <li>- 130 ng/J (0.30 lb/MBtu) heat input if the facility has an annual capacity factor for wood of 30 percent or less.</li> </ul> <p>Verify that facilities that combust coal, wood, or oil with a heat input capacity of greater than 8.7 MW (30 MBtu/h) do not discharge gases with greater than 20 percent opacity (6 min average), except for one 6 min period per hour of not more than 27 percent opacity.</p> <p>(NOTE: Particulate matter and opacity standards apply at all times except during periods of startup, shutdown, or malfunction.)</p>
<p><b>1-8. Steam generating units which started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h), but less than 29 MW (100 MBtu/h), are required to meet specific monitoring standards for SO<sub>2</sub> and particulate matter (40 CFR 60.46c and 60.47c).</b></p>	<p>Verify that continuous emissions monitoring systems are installed, calibrated, maintained, and operated for measuring SO<sub>2</sub> concentrations and either oxygen or CO<sub>2</sub> concentrations at the outlet of the SO<sub>2</sub> control device or the outlet of the steam generating unit if no control device is used.</p> <p>Verify that if continuous emissions monitoring systems for SO<sub>2</sub> are not used, the fuel is sampled prior to combustion.</p> <p>Verify that a continuous monitoring system is installed, calibrated, maintained, and operated for measuring opacity.</p>

**COMPLIANCE CATEGORY:**  
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**REGULATORY  
REQUIREMENTS:**

**1-9.** Steam generating units which started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h), but less than 29 MW (100 MBtu/h), are required to meet specific reporting requirements (40 CFR 60.48c).

**REVIEWER CHECKS:**

Verify that the facility submits excess emissions reports for any calendar quarter in which opacity limits are exceeded.

Verify that if there has been no excess opacity emissions, a semiannual report has been submitted stating there were no excess emissions.

Verify that facilities subject to the SO<sub>2</sub> emissions limits submit quarterly reports including:

- calendar dates covered in the report
- each 30-day average SO<sub>2</sub> emission rate or 30-day average sulfur content
- reasons for noncompliance
- descriptions of any correction actions taken.

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PETROLEUM PRODUCTS</b></p> <p><b>1-10.</b> Leaded gasoline shall not be introduced into any motor vehicle that is labeled UNLEADED GASOLINE ONLY, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline (40 CFR 80.22(a)).</p> <p><b>1-11.</b> Fuel pumps are required to display specific signs (40 CFR 80.22(d) and 80.22(e)).</p> <p><b>1-12.</b> Gasoline pumps dispensing oxygenated gasoline are required to meet specific labeling requirements (40 CFR 80.35).</p>	<p>Interview personnel to determine what grades of gasoline are used, where they are dispensed, and what controls are in place to ensure proper fueling of vehicles.</p> <p>Inspect the facility gas stations to ensure that:</p> <ul style="list-style-type: none"> <li>- signs stating that only unleaded gas should be introduced into labeled vehicles are displayed at each pump stand</li> <li>- nozzles are properly sized</li> <li>- each fuel pump is labeled indicating the type of fuel, i.e., UNLEADED GASOLINE or CONTAINS LEAD ANTI-KNOCK COMPOUNDS.</li> </ul> <p>Determine if the facility is located in an area with an oxygenated gasoline program with a minimum oxygen content per 1 gal [3.79 L] or minimum oxygen content requirements in conjunction with a credit program.</p> <p>Verify that, if the facility is located in such an area, each gasoline pump dispensing oxygenated gasoline at a retail outlet has a label attached during the control period that states: <i>The gasoline dispensed from this pump is oxygenated and will reduce CO pollution from motor vehicles.</i></p> <p>Verify that if the facility is located in an area with an oxygenated gasoline program, with a credit program, and no minimum oxygen content requirement, the fuel pump at a retail outlet in the control area has the following label: <i>The fuel dispensed from this pump meets the requirements of the Clean Air Act as part of a program to reduce CO pollution from motor vehicles.</i></p> <p>(NOTE: Consult with state and local authorities concerning control areas and control periods.)</p>

**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-13.</b> During high ozone seasons, and regulatory control periods, gasoline shall not be sold, offered for sale, imported, dispensed, supplied, or transported that exceeds specific Reid vapor pressure standards (40 CFR 80.27(a)(2) and 80.27(d)).</p> <p><b>1-14.</b> No diesel fuel shall be distributed, transported, offered for sale, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-anthraquinone and has an octane index of at least 40 or a maximum aromatic content of 35 volume percent and a sulfur percentage less than 0.05 percent (40 CFR 80.24(a)(1) and 80.29(a)).</p>	<p>Verify that facilities are monitored as indicated:</p> <ul style="list-style-type: none"> <li>- retailers and wholesale purchaser-consumers: during the high ozone season (1 June to 15 September of any year)</li> <li>- importers, distributors, resellers, or carriers: during the regulatory control period (1 May to 15 September of any year).</li> </ul> <p>Verify that a standard of 9.0 psi [62.05 kPa] is not exceeded for all designated volatility attainment areas.</p> <p>Verify that the standards outlined in Appendix 1-1 are met for any designated volatility nonattainment areas (see 40 CFR 81).</p> <p>(NOTE: Gasoline which contains denatured, anhydrous ethanol of at least 9 percent and no more than 10 percent, may exceed the Reid vapor pressure standards outlined in Appendix 1-1 by 1.0 psi [5.89 kPa].)</p> <p>Verify that the dye, (which is blue green) is not used in the fuel.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-15.</b> After 1 January 1996 retailers and wholesale purchaser-consumers (see definitions) handling over 10,000 gal/mo [37,854.12 L/mo] of fuel are required to provide specific equipment on dispensing pumps (40 CFR 80.22(j)).</p>	<p>Determine if the facility handles over 10,000 gal/mo [37,854.12 L/mo] of fuel.</p> <p>Verify that each pump from which gasoline or methanol is introduced into motor vehicles is equipped with a nozzle that dispenses fuel at a flow rate not exceeding 10 gal/min [37.85 L].</p> <p>(NOTE: After 1 January 1998 this requirements applies to every retailer and wholesale purchaser-consumer regardless of size.)</p> <p>(NOTE: This requirement does not apply to pumps that are shown to be dedicated to heavy-duty vehicles.)</p>



**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>POL STORAGE VESSELS</b></p> <p><b>1-16.</b> Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal), but less than 246,052 L (65,000 gal), that started construction or modification after 8 March 1974 but before 19 May 1978, or with a capacity greater than 246,052 L (65,000 gal) and started construction or modification after 11 June 1973 but before 19 May 1978, are required to meet specific standards for emissions and monitoring (40 CFR 60.110 through 60.113).</p> <p><b>1-17.</b> Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal) constructed after 18 May 1978 are required to meet specific standards (40 CFR 60.110a through 60.115a).</p>	<p>Determine if the facility has any petroleum storage tanks meeting these parameters.</p> <p>Determine what the vapor pressure is of the petroleum liquids being stored.</p> <p>Verify that, if the true vapor pressure of the petroleum stored is equal to or greater than 78 mm Hg (1.5 psia), but not greater than 570 mm Hg (11.1 psia), the storage vessel is equipped with a floating roof and a vapor recovery system or their equivalents.</p> <p>Verify that, if the true vapor pressure of the petroleum liquid being stored is greater than 570 mm Hg (11.1 psia), the storage vessel is equipped with a vapor pressure recovery system or its equivalent.</p> <p>Verify that, if proper vapor recovery and return or disposal systems are not in place, a record is maintained of the petroleum liquid stored, the period of storage, and the maximum true vapor pressure of the liquid during the storage period.</p> <p>(NOTE: Facilities storing petroleum liquids with a Reid vapor pressure of less than 6.9 kPa (1.0 psia) are not required to keep records.)</p> <p>Determine if the facility has any liquid petroleum storage vessels meeting these parameters.</p> <p>Determine the true vapor pressure of the liquids stored.</p> <p>Verify that vessels storing petroleum liquid with a true vapor pressure equal to or greater than 10.3 kPa (1.5 psia) but less than 76.6 kPa (11.1 psia) are equipped with one of the following:</p> <ul style="list-style-type: none"> <li>- an external floating roof meeting design requirements outlined in 40 CFR 60.112a</li> <li>- a fixed roof with an internal floating type cover equipped with a continuous closure device between the tank wall and edges</li> <li>- a vapor recovery system that collects all VOC vapors and gases discharged from the storage vessel and a vapor return or disposal system to process the VOC vapors and gases to reduce emissions by at least 95 percent by weight</li> <li>- an equivalent, approved system.</li> </ul>

**COMPLIANCE CATEGORY:**  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-17. (continued)</b></p>	<p>Verify that vessels storing petroleum liquids with a vapor pressure greater than 76.6 kPa (11.1 psia) are equipped with a vapor recovery system that collects all VOC vapors and gases and a vapor return or disposal system that is designed to process the VOC vapors to reduce emissions by at least 95 percent by weight.</p> <p>Verify that the following testing is done:</p> <ul style="list-style-type: none"> <li>- gap measurement for primary seals of external floating roofs shall be measured at least once every 5 yr</li> <li>- gap measurement for secondary seals of external floating roofs shall be measured at least once every year.</li> </ul> <p>Verify that the following records are kept:</p> <ul style="list-style-type: none"> <li>- records of gap measurement are to be kept for at least 2 yr following the date of measurement</li> <li>- the petroleum liquid stored, the period of storage, and the maximum true vapor pressure during the storage unless the storage vessel has a vapor recovery and return or disposal system.</li> </ul>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>VOL STORAGE VESSELS</b></p> <p><b>1-18.</b> Storage vessels for VOLs having a capacity of greater than or equal to 40 m<sup>3</sup> [10,566.88 gal] for which construction, reconstruction, or modification was started after 23 July 1984 are required to meet specific standards (40 CFR 60.110(b) through 60.115(b)).</p>	<p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- pressure vessels designed to operate in excess of 204.9 kPa [29.72 psi] and without emissions to the atmosphere</li> <li>- vessels which are permanently attached to mobile vehicles</li> <li>- vessels located at bulk gasoline plants</li> <li>- vessels located at gasoline service stations.)</li> </ul> <p>Determine if any of the storage vessels on the facility meet these parameters.</p> <p>Determine what the vapor pressure is of the liquids being stored in the vessels.</p> <p>Verify that storage vessels with a design capacity greater than or equal to 151 m<sup>3</sup> [39,889.98 gal] containing VOL with a vapor pressure equal to or greater than 5.2 kPa [0.75 psi], but less than 76.6 kPa [11.11 psi] or storage vessels with a capacity greater than or equal to 75 m<sup>3</sup> [19,812.90 gal] but less than 151 m<sup>3</sup> [39,889.98 gal] containing VOL that has a maximum vapor pressure equal to or greater than 27.6 kPa [4.0 psi] but less than 76.6 kPa [11.11 psi] are equipped with one of the following:</p> <ul style="list-style-type: none"> <li>- a fixed roof in combination with an internal floating roof</li> <li>- an external floating roof</li> <li>- a closed vent system and control device that reduces emissions by 95 percent by weight</li> <li>- an approved equivalent system.</li> </ul> <p>Verify that storage vessels with a design capacity greater than or equal to 75 m<sup>3</sup> [19,812.90 gal] containing a VOL with a maximum true vapor pressure greater than or equal to 76.6 kPa [11.11 psi] is equipped with one of the following:</p> <ul style="list-style-type: none"> <li>- a closed vent system and control device that reduces emissions by 95 percent by weight</li> <li>- an approved equivalent alternative method.</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>AIR EMISSIONS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>1-18. (continued)</b>	<p>Verify that the accumulated areas or gaps do not exceed:</p> <ul style="list-style-type: none"> <li>- 212 cm<sup>2</sup>/m of tank diameter between the tank wall and the primary seal and the width of any portion of any gap does not exceed 3.81 cm [1.5 in.]</li> <li>- 21.2 cm<sup>2</sup>/m of tank diameter between the tank wall and the secondary seal and the width of any portion of any gap does not exceed 1.27 cm [0.5 in.].</li> </ul>
<p><b>1-19. Storage vessels for VOLs having a capacity of greater than or equal to 40 m<sup>3</sup> [10,566.88 gal] for which construction, reconstruction, or modification was started after 23 July 1984 are required to meet specific inspection, documentation, and notification requirements standards (40 CFR 60.110b through 60.115b).</b></p>	<p>(NOTE: These standards do not apply to pressure vessels designed to operate in excess of 204.9 kPa [29.72 psi] and without emissions to the atmosphere, vessels which are permanently attached to mobile vehicles, vessels located at bulk gasoline plants, or vessels located at gasoline service stations.)</p> <p>Verify that the following inspections are made:</p> <ul style="list-style-type: none"> <li>- inspection of internal floating roofs, primary seals, and secondary seals for holes, tears, or defects before filling the tank</li> <li>- visual inspection of vessels with a liquid-mounted or mechanical shoe primary seal shall have the internal floating roof and primary or secondary seals at least once every 12 mo after the initial fill</li> <li>- inspection of vessels with a double seal system at least every 5 yr</li> <li>- inspection of internal floating roofs, primary seals, gaskets, slotted membranes, and sleeve seals each time the storage vessel is emptied and degassed</li> <li>- measurement of gap areas when control equipment is installed: <ul style="list-style-type: none"> <li>- at least once every 5 yr for gaps between the tank wall and the primary seal</li> <li>- at least once a year for gaps between the tank wall and the secondary seal.</li> </ul> </li> </ul> <p>Verify that as problems are found, the vessel is either repaired or removed from service within 45 days.</p> <p>Verify that a procedure is in place to notify the USEPA in advance of performing gap measurement and provide them, upon request, with copies of the following records which are to be maintained for 2 yr:</p> <ul style="list-style-type: none"> <li>- inspection records</li> <li>- repair or removal from service of a vessel</li> <li>- operating plans</li> <li>- monitoring records</li> <li>- records showing the dimensions of storage vessels and capacity.</li> </ul>

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>1-19. (continued)</b>	<p>Verify that for vessels with a design capacity greater than or equal to 151 m<sup>3</sup> [39,889.98 gal] storing a liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa [0.51 psi] or with a design capacity greater than or equal to 75 m<sup>3</sup> [19,812.90 gal] but less than 151 m<sup>3</sup> [39,889.98 gal], storing a liquid with a true vapor pressure greater than or equal to 15.0 kPa [2.18 psi], a record is kept of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the storage period.</p> <p>(NOTE: This does not apply to vessels storing a waste mixture of indefinite or variable composition or vessels equipped with a closed vent system and control device.)</p> <p>Verify that, except for vessels equipped with a closed vent system and control device, a procedure exists to notify the USEPA within 30 days if the maximum true vapor pressure of a liquid exceeds the following limits for the capacities listed:</p> <ul style="list-style-type: none"> <li>- vessels with a design capacity greater than or equal to 151 m<sup>3</sup> [39,889.98 gal] storing a liquid with a maximum true vapor pressure that is normally less than 5.2 kPa [0.75 psi]</li> <li>- vessels with a design capacity greater than 75 m<sup>3</sup> [19,812.90 gal] but less than 151 m<sup>3</sup> [39,889.98 gal] storing a liquid with a maximum true vapor pressure that is normally less than 27.6 kPa [4.0 psi], notify the USEPA within 30 days when the maximum true vapor pressure of the liquid exceeds the allowed maximum true vapor pressure according to capacity.</li> </ul>
<b>1-20. Benzene storage vessels are required to comply with specific recordkeeping requirements (40 CFR 61.276(b)).</b>	<p>Verify that facilities with benzene storage vessels keep readily accessible records of the dimensions and capacity of the vessel.</p> <p>(NOTE: Benzene storage vessels with a design capacity of less than 38 m<sup>3</sup> (10,000 gal) must comply with this recordkeeping requirement but is exempt from all other standards in 40 CFR 61.270 through 61.277.)</p>





**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>CFCs AND HALONS</b></p> <p><b>General</b></p> <p><b>1-21.</b> In order to minimize atmospheric emissions of ozone-depleting substances, specific good management practices should be instituted at the facility (GMP).</p> <p><b>1-22.</b> In order to protect the ozone, no person repairing or servicing motor vehicles for payment can service an MVAC in any way that affects the refrigerant unless they have been trained and certified and are using approved equipment (40 CFR 82.34(a), 82.42(a), 82.42(b)(1), 82.42(b)(2), and 82.42(b)(4)).</p> <p><b>1-23.</b> Facilities are required to comply with restrictions concerning the use of CFC and halon substitutes (40 CFR 82.174(b) through 82.174(d)).</p>	<p>Verify that ozone-depleting substances are procured only in the absence of suitable alternatives.</p> <p>Verify that there is no disposal of ozone-depleting substance by direct release to the atmosphere.</p> <p>Verify that ozone-depleting substances are recycled.</p> <p>Determine if the facility services MVACs for payment.</p> <p>(NOTE: The term "for payment" is not clearly defined. For FWS facilities the interpretation will be that if the personnel repairing or servicing MVACs is a paid employee of FWS, they must be trained and certified.)</p> <p>Verify that the individual who does the repair is certified and that the equipment being used is approved by the USEPA.</p> <p>Verify that the USEPA Administrator has been notified that there is an individual onsite who has been trained and certified performing MVAC repair.</p> <p>Verify that the facility keeps records of where the refrigerant is sent and personnel certification for 3 yr.</p> <p>(NOTE: Certifications are not transferable.)</p> <p>Verify that no personnel at the facility uses a substitute which they know, or have reason to know, was manufactured, processed, or imported in violation of Federal regulations.</p> <p>Verify that when a substitute is used, it is an acceptable substitute and is used according to the use restrictions outlined in Appendix 1-4.</p> <p>Verify that unacceptable substitutes are not used (see Appendix 1-5).</p>

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-24.</b> As of 1 January 2015 the use of Class II substances (see Appendix 1-3) is forbidden except in certain situations (42 USC 7671d(a)).</p> <p><b>1-25.</b> No person maintaining, servicing, repairing, or disposing of appliances can knowingly vent or release to the environment any Class I or Class II substance used as a refrigerant (40 CFR 82.150 and 82.154(a)).</p> <p><b>1-26.</b> No person can open appliances, except MVACs, for maintenance, service, or repair, and no person can dispose of appliances, except for small appliances, MVACs, and MVAC-like appliances unless specific requirements are met (40 CFR 82.154(b) and 82.156(a)(5)).</p>	<p>Verify that a program is underway to eliminate the use of Class II substances unless:</p> <ul style="list-style-type: none"> <li>- the substance has been reused or recycled</li> <li>- it is used and entirely consumed (except for trace quantities) in the production of other chemicals</li> <li>- it is used as a refrigerant in appliances manufactured prior to 1 January 2020.</li> </ul> <p>Determine if the facility is maintaining, servicing, repairing, or disposing of appliances containing refrigerants.</p> <p>Verify that Class I or II substances are not being vented to the atmosphere.</p> <p>(NOTE: <i>De minimis</i> releases that are associated with good faith attempts to recycle or recover refrigerants are not considered a violation.)</p> <p>(NOTE: These requirements apply to the following:</p> <ul style="list-style-type: none"> <li>- any person servicing, maintaining, or repairing appliances except for MVACs</li> <li>- persons disposing of appliances, including MVACs</li> <li>- refrigerant reclaimers, appliance owners, recycling and recovery equipment.)</li> </ul> <p>Verify that the required practices outline in 40 CFR 82.156 (see checklist items 1-29 through 1-38) are met.</p> <p>Verify that the equipment is certified for the appliance in question.</p>

**COMPLIANCE CATEGORY:**  
**AIR EMISSIONS MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-27.</b> Facilities maintaining, servicing, or repairing appliances, except for MVACs, and facilities disposing of appliances, except for small appliances and MVACs, are required to submit certification to the USEPA (40 CFR 82.162(a)).</p>	<p>Verify that the facility has submitted certification to the USEPA that it has acquired certified recovery or recycling equipment and is in compliance with applicable requirements.</p>
<p><b>1-28.</b> Facilities recovering refrigerant from small appliances, MVACs, and MVAC-like appliances for the purpose of disposal of these appliances are required to certify to the USEPA that appropriate recovery equipment has been acquired (40 CFR 82.162(c)).</p>	<p>Verify that the facility has submitted certification to the USEPA that it has acquired appropriate recovery equipment.</p>
<p><b>1-29.</b> Facilities opening appliances, except for small appliances and MVACs for maintenance, service, or repair, and all persons disposing of appliances other than small appliances, must have at least one piece of certified, self-contained recovery equipment available (40 CFR 82.156(b) and 82.156(e)).</p>	<p>Verify that the facility has at least one available piece of equipment.</p> <p>(NOTE: Refrigerant may be returned to the appliance from which it is recovered or to another appliance without being recycled or reclaimed, unless the appliance is a MVAC-like appliance.)</p>

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-30.</b> System dependent equipment must not be used with appliances normally containing more than 15 lb [6.80 kg] of refrigerant (40 CFR 82.156(c)).</p>	<p>Verify that system dependent equipment is not used with appliances normally containing more than 15 lb [6.80 kg] of refrigerant.</p>
<p><b>1-31.</b> When appliances are opened for service, maintenance, or repair, except for MVACs, the refrigerant must be evacuated in either the entire unit or the part to be serviced, if the part can be isolated, to a system receiver or a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).</p>	<p>Verify that refrigerant is evacuated to either a system receiver or certified recovery or recycling machine.</p>
<p><b>1-32.</b> When appliances, except for small appliances, MVAC, and MVAC-like appliance, are disposed of, the refrigerant must be evacuated from the entire unit to a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).</p>	<p>Verify that, if disposal is occurring, the refrigerant is being evacuated to a certified recovery or recycling machine.</p>

**COMPLIANCE CATEGORY:**  
**AIR EMISSIONS MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-33.</b> When appliances, except for small appliance, MVAC, and MVAC-like appliances, are opened for maintenance, service, or repair, they must be evacuated to specific levels before the appliance is opened (40 CFR 82.150, 82.156 (a)(1), and 82.156 (a)(2)).</p>	<p>Verify that evacuation is done to the levels in Appendix 1-6 prior to opening the appliance unless one of the following is met:</p> <ul style="list-style-type: none"> <li>- evacuation of the appliance is not to be done after completion of the maintenance service, or repair and the maintenance service or repair is not major</li> <li>- the evacuation limits in Appendix 1-6 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated.</li> </ul> <p>Verify that, if evacuation is not to be done after completion of the maintenance, service, or repair, and the maintenance, service, or repair is not major, the appliance is:</p> <ul style="list-style-type: none"> <li>- evacuated to a pressure no higher than 0 psig before it is opened if it is a high or very high-pressure appliance</li> <li>- pressurized to 0 psig before it is opened if it is a low pressure appliance, without using methods, such as nitrogen, that require subsequent purging.</li> </ul> <p>Verify that if the evacuation limits in Appendix 1-6 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated, the person opening the appliance:</p> <ul style="list-style-type: none"> <li>- isolates leaking from nonleaking components whenever possible</li> <li>- evacuates leaking components to be opened to the lowest level that can be attained without substantially contaminating the refrigerant, in no case exceeding 0 psig.</li> </ul>
<p><b>1-34.</b> Appliances, except for small appliances, MVACs, and MVAC-like appliances, that are being disposed of must be evacuated to the levels in Appendix 1-6 (40 CFR 82.150 and 82.156 (a)(3)).</p>	<p>Verify that appliances are evacuated to the levels listed in Appendix 1-6 prior to disposal.</p>

**COMPLIANCE CATEGORY:  
AIR EMISSIONS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-35.</b> Specific evacuation limits must be met when opening small appliances for maintenance, service, or repair (40 CFR 82.150 and 82.156(a)(4)).</p> <p><b>1-36.</b> Facilities which take the final step in the disposal process of a small appliance, room air conditioning, MVACs, or MVAC-like appliances must meet specific standards (40 CFR 82.156(f), 82.166(i), and 82.166(m)).</p>	<p>Verify that when recycling and recovery equipment manufactured prior to 15 November 1993 is used, 80 percent of the refrigerant is recovered or the small appliance is evacuated to 4 in. [13.55 kPa] Hg vacuum.</p> <p>Verify that when recycling and recovery equipment manufactured on or after 15 November 1993 is used, 90 percent of the refrigerant in the appliance is recovered when the compressor in the appliance is operating or 80 percent of the refrigerant when the compressor is not operating or the small appliance is evacuated to 4 in. [10.16 cm] Hg vacuum.</p> <p>(NOTE: This includes, but is not limited to, scrap recyclers and landfill operators.)</p> <p>Verify that facilities:</p> <ul style="list-style-type: none"> <li>- recovers any remaining refrigerant from the appliance</li> <li>- checks that the refrigerant has been evacuated from the appliance or shipment of appliances previously by reviewing a signed statement from the person from whom the appliance or shipment of appliances is obtained that all refrigerant has been recovered.</li> </ul> <p>Verify that copies of signed statements are retained for 3 yr.</p>
<p><b>1-37.</b> Facilities recovering refrigerant for purpose of disposal must meet specific standards (40 CFR 82.156(g) and 82.156(h)).</p>	<p>Verify that, if the facility recovers refrigerant from MVACs and MVAC-like appliances for purpose of disposal of the appliance, the system pressure is reduced to or below 102 mm [13.60 kPa] Hg vacuum.</p> <p>Verify that the facility recovering refrigerant from small appliances for the purpose of disposal of the appliance does one of the following:</p> <ul style="list-style-type: none"> <li>- recovers 90 percent of the refrigerant when the compressor in the appliance is operating</li> <li>- recovers 80 percent of the refrigerant in the appliance when the compressor in the appliance is not operating</li> <li>- evacuates the small appliance to 4 in. [13.55 kPa] Hg vacuum.</li> </ul>

**COMPLIANCE CATEGORY:**  
**AIR EMISSIONS MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>1-38.</b> Leaking appliances must be repaired when specific limits are exceeded (40 CFR 82.156(i)).</p>	<p>Verify that, if the facility owns commercial and industrial process refrigeration equipment, all leaks are repaired, if the equipment is leaking, at a rate such that the loss of refrigerant will exceed 35 percent of the total charge during a 12-mo period.</p> <p>Verify that other appliances normally containing more than 50 lb [22.68 kg] of refrigerant are repaired, if the appliance is leaking, at a rate such that the loss of refrigerant will exceed 15 percent of the total charge during a 12-mo period.</p> <p>(NOTE: Leaks are not required to be repaired if, within 30 days, the facility has developed a 1 yr retrofit or retirement plan for the leaking equipment. The plan, or a legible copy, must be kept at the site of the equipment.)</p> <p>Verify that leaks have been repaired within 30 days of discovery or within 30 days of when the leak should have been discovered, if the facility intentionally shielded themselves from information which would have revealed a leak.</p>





**COMPLIANCE CATEGORY:**  
**AIR EMISSIONS MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Recordkeeping</b></p> <p><b>1-39.</b> Facilities that sell or distribute any Class I or Class II substance for use as a refrigerant are required to retain invoices (40 CFR 82.166(a) and 82.166 (m)).</p> <p><b>1-40.</b> Facilities servicing appliances normally containing 50 lb [22.68 kg] or more of refrigerant are required to supply the owner of the appliance with documentation as to how much refrigerant was added and the owner of the appliance must retain the servicing records (40 CFR 82.166(j) and 82.166 (k)).</p>	<p>Verify that facilities that sell or distribute any Class I or Class II substance for use as a refrigerant retains invoices indicating the name of the purchaser, the date of sale, and the quantity of refrigerant purchased.</p> <p>Verify that records are retained for 3 yr.</p> <p>Verify that documentation of servicing and amounts of refrigerant added is provided to the appliance owner and retained for 3 yr.</p>



# Appendix 1-1

## Reid Vapor Pressure for Installation Geographic Area (40 CFR 80.27)

State	May	June	July	August	September
Alabama	9.0	7.8	7.8	7.8	7.8
Arizona	9.0	7.8	7.8	7.8	7.8
Arkansas	9.0	7.8	7.8	7.8	7.8
California	9.0	7.8	7.8	7.8	7.8
Colorado*	9.0	7.8	7.8	7.8	7.8
Connecticut	9.0	9.0	9.0	9.0	9.0
Delaware	9.0	9.0	9.0	9.0	9.0
District of Columbia	9.0	7.8	7.8	7.8	7.8
Florida	9.0	7.8	7.8	7.8	7.8
Georgia	9.0	7.8	7.8	7.8	7.8
Idaho	9.0	9.0	9.0	9.0	9.0
Illinois	9.0	9.0	9.0	9.0	9.0
Indiana	9.0	9.0	9.0	9.0	9.0
Iowa	9.0	9.0	9.0	9.0	9.0
Kansas	9.0	7.8	7.8	7.8	7.8
Kentucky	9.0	9.0	9.0	9.0	9.0
Louisiana	9.0	7.8	7.8	7.8	7.8
Maine	9.0	9.0	9.0	9.0	9.0
Maryland	9.0	7.8	7.8	7.8	7.8
Massachusetts	9.0	9.0	9.0	9.0	9.0
Michigan	9.0	9.0	9.0	9.0	9.0
Minnesota	9.0	9.0	9.0	9.0	9.0
Mississippi	9.0	7.8	7.8	7.8	7.8
Missouri	9.0	7.8	7.8	7.8	7.8
Montana	9.0	9.0	9.0	9.0	9.0
Nebraska	9.0	9.0	9.0	9.0	9.0

(continued)

**Appendix 1-1 (continued)**

<b>State</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>	<b>September</b>
Nevada	9.0	7.8	7.8	7.8	7.8
New Hampshire	9.0	9.0	9.0	9.0	
New Jersey	9.0	9.0	9.0	9.0	
New Mexico	9.0	7.8	7.8	7.8	7.8
New York	9.0	9.0	9.0	9.0	9.0
North Carolina	9.0	7.8	7.8	7.8	7.8
North Dakota	9.0	9.0	9.0	9.0	9.0
Ohio	9.0	9.0	9.0	9.0	9.0
Oklahoma	9.0	7.8	7.8	7.8	7.8
Oregon	9.0	7.8	7.8	7.8	7.8
Pennsylvania	9.0	9.0	9.0	9.0	9.0
Rhode Island	9.0	9.0	9.0	9.0	9.0
South Carolina	9.0	7.8	7.8	7.8	7.8
South Dakota	9.0	9.0	9.0	9.0	9.0
Tennessee					
Knox County	9.0	9.0	9.0	9.0	9.0
All other volatility nonattainment areas	9.0	7.8	7.8	7.8	7.8
Texas	9.0	7.8	7.8	7.8	7.8
Utah	9.0	7.8	7.8	7.8	7.8
Vermont	9.0	9.0	9.0	9.0	9.0
Virginia	9.0	7.8	7.8	7.8	7.8
Washington	9.0	9.0	9.0	9.0	9.0
West Virginia	9.0	9.0	9.0	9.0	9.0
Wisconsin	9.0	9.0	9.0	9.0	9.0
Wyoming	9.0	9.0	9.0	9.0	9.0

\* The standard for 1992 and 1995 in the Denver-Boulder nonattainment area will be 9.0 for 1 June through 15 September.

<sup>1</sup> Standards are expressed in psi.

## Appendix 1-2

### Formula for Calculating SO<sub>2</sub> Emissions Limitations (40 CFR 60.42c(e)(2))

The following applies to steam generating units for which construction, modification, or reconstruction started after 9 June 1989 with a maximum design heat input capacity of 29 MW (100 MBtu/h) or less, but greater than or equal to 2.9 MW (10 MBtu/h).

$$E = \left( \frac{K_a H_a + K_b H_b + K_c H_c}{H_a + H_b + H_c} \right)$$

where:

E = the SO<sub>2</sub> emission limit expressed in ng/J or lb/MBtu heat input

K<sub>a</sub> = 520 ng/J (1.2 lb/MBtu)

K<sub>b</sub> = 260 ng/J (0.60 lb/MBtu)

K<sub>c</sub> = 215 ng/J (0.50 lb/MBtu)

H<sub>a</sub> = the heat input from the combustion of coal, except coal combusted in a facility that combusts only coal and uses emerging technology, in J (MBtu)

H<sub>b</sub> = the heat input from the combustion of coal, except coal combusted in a facility that combusts only coal and uses emerging technology, in J (MBtu)

H<sub>c</sub> = the heat input from the combustion of oil, in J (MBtu).



## Appendix 1-3

### Controlled Substances and Ozone Depletion Weights (40 CFR 82, Appendix A and Appendix B)

Controlled Substance	Ozone Depletion Weight
<i>Class I</i>	
<b>Group I</b>	
CFC-1 <sub>3</sub> - Trichlorofluoromethane (CFC-11)	1.0
CF <sub>2</sub> C1 <sub>2</sub> - Dichlorodifluoromethane (CFC-12)	1.0
C <sub>2</sub> F <sub>3</sub> C1 <sub>3</sub> - Trichlorotrifluoroethane (CFC-113)	0.8
C <sub>2</sub> F <sub>4</sub> C1 <sub>2</sub> - Dichlorotetrafluoroethane (CFC-114)	1.0
C <sub>2</sub> F <sub>5</sub> C1 - (Mono)chloropentafluoroethane (CFC-115)	0.6
All isomers of the above chemicals	
<b>Group II</b>	
CF <sub>2</sub> C1Br - Bromochlorodifluoromethane (Halon 1211)	3.0
CF <sub>3</sub> Br - Bromotrifluoromethane (Halon 1301)	10.0
C <sub>2</sub> F <sub>4</sub> Br <sub>2</sub> - Dibromotetrafluoroethane (Halon 2402)	6.0
All isomers of the above chemicals	
<b>Group III</b>	
CF <sub>3</sub> C1 - Chlorotrifluoromethane (CFC-13)	1.0
C <sub>2</sub> FC1 <sub>5</sub> - (CFC-111)	1.0
C <sub>2</sub> F <sub>2</sub> C1 <sub>4</sub> - (CFC-112)	1.0
C <sub>3</sub> FC1 <sub>7</sub> - (CFC-211)	1.0
C <sub>3</sub> F <sub>2</sub> C1 <sub>6</sub> - (CFC-212)	1.0
C <sub>3</sub> F <sub>3</sub> Cl <sub>5</sub> - (CFC-213)	1.0
C <sub>3</sub> F <sub>4</sub> C1 <sub>4</sub> - (CFC-214)	1.0
C <sub>3</sub> F <sub>5</sub> C1 <sub>3</sub> - (CFC-215)	1.0
C <sub>3</sub> F <sub>6</sub> C1 <sub>2</sub> - (CFC-216)	1.0
C <sub>3</sub> F <sub>7</sub> C1 - (CFC-217)	1.0
All isomers of the above chemicals	
<b>Group IV</b>	
CC1 <sub>4</sub> - Carbon Tetrachloride	1.1

(continued)

# Appendix 1-3 (continued)

Controlled Substance	Ozone Depletion Weight
<b>Group V</b>	
C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub> -1,1,1-Trichloroethane (Methyl Chloroform) All isomers of the above chemicals	0.1
<b>Group VI</b>	
CH <sub>3</sub> Br - Bromomethane (Methyl Bromide)	0.7
<b>Group VII</b>	
CH <sub>2</sub> Br <sub>2</sub>	1.00
CHF <sub>2</sub> Br (HBFC-22B1)	0.74
CH <sub>2</sub> FBr	0.73
C <sub>2</sub> H <sub>2</sub> Br <sub>4</sub>	0.3 - 0.8
C <sub>2</sub> HF <sub>2</sub> Br <sub>3</sub>	0.5 - 1.8
C <sub>2</sub> HF <sub>3</sub> Br <sub>2</sub>	0.4 - 1.6
C <sub>2</sub> HF <sub>4</sub> Br	0.7 - 1.2
C <sub>2</sub> H <sub>2</sub> FBr <sub>3</sub>	0.1 - 1.1
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Br <sub>2</sub>	0.2 - 1.5
C <sub>2</sub> H <sub>2</sub> F <sub>3</sub> Br	0.7 - 1.6
C <sub>2</sub> H <sub>3</sub> FBr <sub>2</sub>	0.1 - 1.7
C <sub>2</sub> H <sub>3</sub> F <sub>2</sub> Br	0.2 - 1.1
C <sub>2</sub> H <sub>4</sub> FBr	0.07 - 0.1
C <sub>3</sub> H <sub>2</sub> Br <sub>6</sub>	0.3 - 1.5
C <sub>3</sub> HF <sub>2</sub> Br <sub>5</sub>	0.2 - 1.9
C <sub>3</sub> HF <sub>3</sub> Br <sub>4</sub>	0.3 - 1.8
C <sub>3</sub> HF <sub>4</sub> Br <sub>3</sub>	0.5 - 2.2
C <sub>3</sub> HF <sub>5</sub> Br <sub>2</sub>	0.9 - 2.0
C <sub>2</sub> HF <sub>6</sub> Br	0.7 - 3.3
C <sub>3</sub> H <sub>2</sub> FBr <sub>5</sub>	0.1 - 1.9
C <sub>3</sub> H <sub>2</sub> F <sub>2</sub> Br <sub>4</sub>	0.2 - 2.1
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> Br <sub>3</sub>	0.2 - 5.6
C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> Br <sub>2</sub>	0.3 - 7.5
C <sub>3</sub> H <sub>2</sub> F <sub>5</sub> Br	0.9 - 1.4
C <sub>3</sub> H <sub>3</sub> FBr <sub>4</sub>	0.06 - 1.9
C <sub>3</sub> H <sub>3</sub> F <sub>2</sub> Br <sub>3</sub>	0.1 - 3.1
C <sub>3</sub> H <sub>3</sub> F <sub>3</sub> Br <sub>2</sub>	0.1 - 2.5
C <sub>3</sub> H <sub>3</sub> F <sub>4</sub> Br	0.3 - 4.4
C <sub>3</sub> H <sub>4</sub> FBr <sub>3</sub>	0.03 - 0.3

(continued)



# Appendix 1-3 (continued)

Controlled Substance	Ozone Depletion Weight
C <sub>3</sub> H <sub>4</sub> F <sub>2</sub> Br <sub>2</sub>	0.1 - 1.0
C <sub>3</sub> H <sub>4</sub> F <sub>3</sub> Br	0.07 - 0.8
C <sub>3</sub> H <sub>5</sub> FBr <sub>2</sub>	0.04 - 0.4
C <sub>3</sub> H <sub>5</sub> F <sub>2</sub> Br	0.07 - 0.8
C <sub>3</sub> H <sub>6</sub> FB	0.02 - 0.7
<i>Class II</i>	
CHFCI <sub>2</sub> - Dichlorofluoromethane (HCFC-21)	*[res.]
CHF <sub>2</sub> Cl - Chlorodifluoromethane (HCFC-22)	0.05
CH <sub>2</sub> FCI - Chlorofluoromethane (HCFC-31)	[res.]
C <sub>2</sub> HFCI <sub>4</sub> - (HCFC-121)	[res.]
C <sub>2</sub> HFCI <sub>2</sub> Cl <sub>3</sub> - (HCFC-122)	[res.]
C <sub>2</sub> HF <sub>3</sub> Cl <sub>2</sub> - (HCFC-123)	0.02
C <sub>2</sub> HF <sub>4</sub> Cl - (HCFC-124)	0.02
C <sub>2</sub> H <sub>2</sub> FCI <sub>3</sub> - (HCFC-131)	[res.]
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Cl <sub>2</sub> - (HCFC-132b)	[res.]
C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> Cl - (HCFC-133a)	[res.]
C <sub>2</sub> H <sub>3</sub> FCI <sub>2</sub> - (HCFC-141b)	0.12
C <sub>2</sub> H <sub>3</sub> F <sub>2</sub> Cl - (HCFC-142b)	0.06
C <sub>3</sub> HFCI <sub>6</sub> - (HCFC-221)	[res.]
C <sub>3</sub> HF <sub>2</sub> Cl <sub>5</sub> - (HCFC-222)	[res.]
C <sub>3</sub> HF <sub>3</sub> Cl <sub>4</sub> - (HCFC-223)	[res.]
C <sub>3</sub> HF <sub>4</sub> Cl <sub>3</sub> - (HCFC-224)	[res.]
C <sub>3</sub> HF <sub>5</sub> Cl <sub>2</sub> - (HCFC-225ca)	[res.]
C <sub>3</sub> HF <sub>5</sub> Cl <sub>2</sub> (HCFC-225cb)	[res.]
C <sub>3</sub> HF <sub>6</sub> Cl - (HCFC-226)	[res.]
C <sub>3</sub> H <sub>2</sub> FCI <sub>5</sub> - (HCFC-231)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>2</sub> Cl <sub>4</sub> - (HCFC-232)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>3</sub> Cl <sub>3</sub> - (HCFC-233)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> Cl <sub>2</sub> - (HCFC-234)	[res.]
C <sub>3</sub> H <sub>2</sub> F <sub>5</sub> Cl - (HCFC-235)	[res.]
C <sub>3</sub> H <sub>3</sub> FCI <sub>4</sub> - (HCFC-241)	[res.]
C <sub>3</sub> H <sub>3</sub> F <sub>2</sub> Cl <sub>3</sub> - (HCFC-242)	[res.]
C <sub>3</sub> H <sub>3</sub> F <sub>3</sub> Cl <sub>2</sub> - (HCFC-243)	[res.]
C <sub>3</sub> H <sub>3</sub> F <sub>4</sub> Cl - (HCFC-244)	[res.]
C <sub>3</sub> H <sub>4</sub> FCI <sub>3</sub> - (HCFC-251)	[res.]

(continued)

### Appendix 1-3 (continued)

Controlled Substance	Ozone Depletion Weight
$C_3H_4F_2Cl_2$ - (HCFC-252)	[res.]
$C_3H_4F_3Cl$ - (HCFC-253)	[res.]
$C_3H_5FCl_2$ - (HCFC-261)	[res.]
$C_3H_5F_2Cl$ - (HCFC-262)	[res.]
$C_3H_6FCl$ - (HCFC-271)	[res.]
All isomers of the above chemicals	[res.]

\*[res.] means reserve. It designates that the ozone depletion weight number has been reserved for a future rating.

## Appendix 1-4

### Acceptable Substitutes (40 CFR 82.170 through 82.194)

#### SUBSTITUTES ACCEPTABLE SUBJECT TO NARROWED USE LIMITS

End-use	Substitute	Decision	Comments
Electronics cleaning w/ CFC-113, MCF	Perfluoro-carbons (C5F12, C6F12, C6F14, C7F16, C8F18, C5F11NO, C6F13NO, C7F15NO, and C8F16).	Acceptable for high-performance, precision-engineered applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	<p>The principle environmental characteristic of concern for PFCs is that they have long atmospheric lifetimes and high global warming potentials. Although actual contributions to global warming depend upon the quantities of PFCs emitted, the effects are for practical purposes irreversible.</p> <p>Users must observe this limitation on PFC acceptability by conducting a reasonable evaluation of other substitutes to determine that PFC use is necessary to meet performance or safety requirements. Documentation of this evaluation must be kept on file.</p> <p>For additional guidance regarding applications in which PFCs may be appropriate, users should consult the Preamble for this rulemaking.</p>
Precision cleaning w/ CFC-113, MCF	Perfluoro-carbons (C5F12, C6F12, C6F14, C7F16, C8F18, C5F11NO, C6F13NO, C7F15NO, and C8F16).	Acceptable for high-performance, precision-engineered applications only where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.	<p>The principle environmental characteristic of concern for PFCs is that they have long atmospheric lifetimes and high global warming potentials. Although actual contributions to global warming depend upon the quantities of PFCs emitted, the effects are for practical purposes irreversible.</p> <p>Users must observe this limitation on PFC acceptability by conducting a reasonable evaluation of other substitutes to determine that PFC use is necessary to meet performance or safety requirements. Documentation of this evaluation must be kept on file.</p> <p>For additional guidance regarding applications in which PFCs may be appropriate, users should consult the Preamble for this rulemaking.</p>

(continued)

## Appendix 1-4 (continued)

### FIRE SUPPRESSION AND EXPLOSION PROTECTION STREAMING AGENTS

End-use	Substitute	Decision	Conditions	Comments
Halon 1211 Streaming Agents	[CFC Blend]	Acceptable in nonresidential uses only		Use of CFCs are controlled under CAA section 610 which bans use of CFCs in pressurized dispensers, and therefore are not permitted for use in portable for extinguishers. USEPA will list this agent as proposed unacceptable in the next SNAP proposed rulemaking. Because CFCs are a Class I substance, production will be phased out by 1 January 1996. See additional comments 1,2.
	HBFC-22B1		Acceptable in nonresidential uses only.	Proper procedures regarding the operation of the extinguisher and ventilation following dispensing the extinguishant is recommended. Worker exposure may be a concern in small office areas. HBFC-22B1 is considered an interim substitute for Halon 1211. Because the HBFC22B1 has an ODP of 0.74, production will be phased out (except for essential uses) on 1 January 1996. This agent was submitted to the Agency as a Premanufacture Notice (PMN) and is presently subject to requirements contained in a <i>Toxic Substance Control Act</i> (TSCA) Consent Order. See additional comments 1,2.
	C <sub>6</sub> F <sub>14</sub>	Acceptable for nonresidential uses where other alternatives are not technically feasible due to performance or safety requirements:  a. due to the physical or chemical properties of the agent, or  b. where human exposure to the extinguishing agent may approach cardiosensitization levels or result in other unacceptable health effects under normal operating conditions.		Users must observe the limitations on PFC acceptability by making reasonable effort to undertake the following measures: (i) conduct an evaluation of foreseeable conditions of end use; (ii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use (iii) determine that human exposure to the other alternative extinguishing agents may approach or result in cardiosensitization or other unacceptable toxicity effects under normal operating conditions. Documentation of such measures must be available for review upon request.  The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted. For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the preamble to this rulemaking. See additional comments 1, 2.

**Additional Comments:**

1. Discharge testing and training should be strictly limited only to that which is essential to meet safety or performance requirements.
2. The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

(continued)

# Appendix 1-4 (continued)

## FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS

End-use	Substitute	Decision	Conditions	Comments
Halon 1301 Total Flooding Agents.	HBFC-22B1	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 0.3%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 1.0%.</p> <p>HBFC-22B1 concentrations greater than 1.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 5.3%. While its cardiotoxic LOAEL is 1%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>HBFC-22B1 can be considered only an interim substitute for Halon 1301. HBFC-22B1 has an ODP of 0.74; thus, production will be phased out January 1, 1996.</p> <p>This agent was submitted to the Agency as a PMN and is presently subject to requirements contained in a TSCA Consent Order.</p> <p>See additional comments 1,2,3,4.</p>
	HCFC-22	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 2.5%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 5.0%.</p> <p>HCFC-22 concentrations greater than 5.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 13.9% while its cardiotoxic LOAEL is 5.0%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See additional comments 1,2,3,4.</p>

(continued)

## Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS				
End-use	Substitute	Decision	Conditions	Comments
	HCFC-124	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 1.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL OF 2.5%.</p> <p>HCFC-123 concentrations greater than 2.5% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 8.4% while its cardiotoxic LOAEL is 2.5%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See additional comments 1,2,3,4.</p>
	[HCFC BLEND] A	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within one minute, the employer shall not use [HCFC Blend] A in concentrations exceeding its cardiotoxic NOAEL of 10.0%.</p> <p>Where egress takes greater than 30 s but less than 1 min, the employer shall not use [HCFC Blend] A in a concentration greater than its cardiotoxic LOAEL of 10.0%.</p> <p>[HCFC Blend] A concentrations greater than 10 percent are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 sec. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on full-scale testing is approximately 8.6%.</p> <p>The agent should be recovered from the fire protection system in conjunction with testing or servicing, and should be recycled for later use or destroyed.</p> <p>See additional comments 1,2,3,4.</p>

(continued)

## Appendix 1-4 (continued)

### FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS

End-use	Substitute	Decision	Conditions	Comments
	HFC-23	Acceptable	<p>Until OSHA establishes applicable work-place requirements: Where egress from an area cannot be accomplished within 1 min, the employer shall not use HFC-23 in concentrations exceeding 30%.</p> <p>Where egress takes greater than 30 sec but less than 1 min, the employer shall not use HFC-23 in a concentration greater than 50.0%.</p> <p>HFC-23 concentrations greater than 50 percent are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p> <p>The design concentration must result in an oxygen level of at least 16%.</p>	<p>The comparative design concentration based on cup burner values is approximately 14.4% while data indicates that its cardiotoxicity NOAEL is 30% without added oxygen and 50% with added oxygen. Its LOAEL is likely to exceed 50%.</p> <p>See additional comments 1,2, 3, 4.</p>
	HFC-125	Acceptable	<p>Until OSHA establishes applicable work-place requirements: Where egress from an area cannot be accomplished within one minute, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 7.5%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 10.0%.</p> <p>HFC-125 concentrations greater than 10.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 11.3% while its cardiotoxic LOAEL is 10.0%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See additional comments 1, 2, 3, 4.</p>

(continued)

## Appendix 1-4 (continued)

FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS				
End-use	Substitute	Decision	Conditions	Comments
	HFC-134a	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within 1 min, the employer shall not use this agent in concentrations exceeding its cardiotoxic NOAEL of 4.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 8.0%.</p> <p>HFC-134a concentrations greater than 8.0% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 12.6% while its cardiotoxic LOAEL is 8.0%. Thus, it is unlikely that this agent will be used in normally occupied areas.</p> <p>See additional comments 1, 2, 3, 4.</p>
	HFC-227ea	Acceptable	<p>Until OSHA establishes applicable workplace requirements:</p> <p>Where egress from an area cannot be accomplished within one minute, the employer shall not use HFC-227ea in concentrations exceeding its cardiotoxic NOAEL of 9.0%.</p> <p>Where egress takes longer than 30 s but less than 1 min, the employer shall not use the agent in a concentration greater than its cardiotoxic LOAEL of 10.5%.</p> <p>HFC-227ea concentrations greater than 10.5% are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within 30 s. The employer shall assure that no unprotected employees enter the area during agent discharge.</p>	<p>The comparative design concentration based on cup burner values is approximately 7.0% while data indicate that its cardiotoxicity LOAEL is probably greater than 10.5%.</p> <p>USEPA is accepting 10.5% as its LOAEL.</p> <p>This agent was submitted to the Agency as a PMN agent and is presently subject to requirements contained in a TSCA Significant New Use Rule (SNUR).</p> <p>See additional comments 1, 2, 3, 4.</p>

(continued)



## Appendix 1-4 (continued)

### FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS

End-use	Substitute	Decision	Conditions	Comments
	C4F10	<p>Acceptable</p> <p>where other alternatives are not technically feasible due to performance or safety requirements:</p> <p>a. due to their physical or chemical properties, or</p> <p>b. where human exposure to the extinguishing agents may approach cardiosensitization levels or result in other unacceptable health effects under normal operating conditions.</p>	<p>Until OSHA establishes applicable workplace requirements:</p> <p>For occupied areas from which personnel cannot be evacuated in one minute, use is permitted only up to concentrations not exceeding the cardiotoxicity NOAEL of 40%.</p> <p>Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e., for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 seconds, use is permitted up to a concentration not exceeding the LOAEL.</p> <p>All personnel must be evacuated before concentration of C<sub>4</sub>F<sub>10</sub> exceeds 40%. Design concentration must result in oxygen levels of at least 16%. Documentation of such measures must be available for review upon request.</p>	<p>The comparative design concentration based on cup burner values is approximately 6.6%.</p> <p>Users must observe the limitations on PFC acceptability by making reasonable efforts to undertake the following measures:</p> <p>(i) conduct an evaluation of foreseeable conditions of end use;</p> <p>(ii) determine that human exposure to the other alternative extinguishing agents may approach or result in cardiosensitization or other unacceptable toxicity effects under normal operating conditions</p> <p>(iii) determine that the physical or chemical properties or other technical constraints of the other available agents preclude their use.</p> <p>The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted.</p> <p>For additional guidance regarding applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in this rulemaking. See additional comments 1, 2, 3, 4.</p>

(continued)

## Appendix 1-4 (continued)

### FIRE SUPPRESSION AND EXPLOSION PROTECTION TOTAL FLOODING AGENTS

End-use	Substitute	Decision	Conditions	Comments
	[IG-541]	Acceptable	<p>Until OSHA establishes applicable workplace requirements:  The design concentration must result in at least 10% oxygen and no more than 5% CO<sub>2</sub>.  If the oxygen concentration of the atmosphere falls below 10%, personnel must be evacuated and egress must occur within 30 s.</p>	<p>Studies have shown that healthy, young individuals can remain in a 10% to 12% oxygen atmosphere for 30 to 40 min without impairment. However, in a fire emergency, the oxygen level may be reduced below safe levels, and the combustion products formed by the fire are likely to cause harm. Thus, the Agency does not contemplate personnel remaining in the space after system discharge during a fire without Self Contained Breathing Apparatus (SCBA) as required by OSHA.  See additional comments 1,2.</p>

**Additional Comments:**

1. Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the USC.
2. Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must reenter the area.
3. Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.
4. The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.

(continued)

## Appendix 1-4 (continued)

### Fire Suppression And Explosion Protection Total Flooding Agents Substitutes Acceptable Subject to Narrowed Use Limits

End-use	Substitute	Decision	Conditions	Comments
Halon 1301 Total Flooding Agents.	C4F10	Acceptable where other alternatives are not tech- nically feasi- ble due to per- formance or safety require- ments:  a. Due to their physical or chemical properties, or b. Where human exposure to the extin- guishing agents may approach cardiosensi- tization lev- els or result in other unaccept- able health effects under nor- mal operat- ing conditions.	Until OSHA establishes applicable workplace requirement: For occupied areas from which personnel cannot be evacuated in one minute, use is permitted only up to concentrations not exceeding the cardiotoxicity NOEL of 40%.  Although no LOAEL has been established for this product, standard OSHA requirements apply, i.e. for occupied areas from which personnel can be evacuated or egress can occur between 30 and 60 s, use is per- mitted up to a concentration not exceeding the LOAEL. All personnel must be evacuated before concentration of C <sub>4</sub> F <sub>10</sub> exceeds 40%. Design concentration must result in oxygen levels of at least 16%.	The comparative design concen- tration based on cup burner values is approximately 6.6%. Users must observe the limita- tions on PFC approval by undertaking the following mea- sures: (i) Conduct an evaluation of fore- seeable conditions of end use; (ii) Determine that human expo- sure to the other alternative extinguishing agents may approach or result in cardi- osensitization or other unac- ceptable toxicity effects under normal operating conditions; and (iii) Determine that the physical or chemical properties or other technical constraints of the other available agents pre- clude their use; Documentation of such mea- sures must be available for review upon request. The principal environmental characteristic of concern for PFCs is that they have high GWPs and long atmospheric lifetimes. Actual contributions to global warming depend upon the quantities of PFCs emitted. For additional guidance regard- ing applications in which PFCs may be appropriate, users should consult the description of potential uses which is included in the preamble to this rulemaking. See additional comments 1, 2, 3, 4.

**Additional Comments:**

1. Must conform with OSHA 29 CFR 1910 Subpart L Section 1910.160 of the U.S. Code.
2. Per OSHA requirements, protective gear (SCBA) must be available in the event personnel must reenter the area.
3. Discharge testing should be strictly limited only to that which is essential to meet safety or performance requirements.
4. The agent should be recovered from the fire protection system in conjunction with testing or servicing, and recycled for later use or destroyed.



## Appendix 1-5

### Unacceptable CFC and Halon Substitutes (40 CFR 82.170 through 82.194, Appendix A)

End Use	Substitute	Decision	Comments
Metals cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Metals cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
Electronics cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Electronics cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
Precision Cleaning w/CFC-113	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment. USEPA will grant, if necessary, narrowed use acceptability listings for CFC-113 past the effective date of the prohibition.
Precision Cleaning w/MCF	HCFC 141b and its blends	Unacceptable	High ODP; other alternatives exist. Effective date: As of 30 days after final rule for uses in new equipment (including retrofits made after the effective date); as of 1 January 1996 for uses in existing equipment.
<b>Refrigerants</b>			
CFC-11 centrifugal chillers (retrofit).	HCFC-141b	Unacceptable	Has a high ODP relative to other alternatives.
CFC-12 centrifugal chillers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)

## Appendix 1-5 (continued)

End Use	Substitute	Decision	Comments
CFC-11, CFC-12, CFC-113, CFC-114, R-500 centrifugal chillers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
	HCFC-141b	Unacceptable	Has a high ODP relative to other alternatives.
CFC-12 reciprocating chillers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 reciprocating chillers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-11, CFC-12, R-502 industrial process refrigeration (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
CFC-11, CFC-12, R-502 industrial process refrigeration (new equipment/NIKs)	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
CFC-12, R-502 ice skating rinks (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 ice skating rinks (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 cold storage warehouses (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 cold storage warehouses (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500, R-502 refrigerated transport (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)

## Appendix 1-5 (continued)

End Use	Substitute	Decision	Comments
CFC-12, R-500, R-502 refrigerated transport (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 retail food refrigeration (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 retail food refrigeration (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 commercial ice machines (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 commercial ice machines (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 vending machines (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 vending machines (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 water coolers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 water coolers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.

(continued)

## Appendix 1-5 (continued)

End Use	Substitute	Decision	Comments
CFC-12 household refrigerators (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 household refrigerators (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 household freezers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-502 household freezers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500 residential dehumidifiers (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12, R-500 residential dehumidifiers (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 motor vehicle air conditioners (retrofit).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.
CFC-12 motor vehicle air conditioners (new equipment/NIKs).	HCFC-22/HCF-142b/CFC-12	Unacceptable	As a blend of both Class I and Class II substances, it has a higher ODP than use of Class II substances.
	Hydrocarbon blend A	Unacceptable	Flammability is a serious concern. Data have not been submitted to demonstrate it can be used safely in this end-use.



End Use	Substitute	Decision	Comments
<b>foams</b>			
CFC-11 Polyolefin	HCFC-141b (or blends thereof)	Unacceptable	HCFC-141b has an ODP of 0.11, almost equivalent to that of methyl chloroform, a Class I substance. The Agency believes that non-ODP alternatives are sufficiently available to render the use of HCFC-141b unnecessary in polyolefin foams.
<b>Fire Suppression and Explosion Protection Streaming Agents</b>			
Halon 1211 Streaming Agents	[CFC-11]	Unacceptable	This agent has been suggested for use on large outdoor fires for which nonozone depleting alternatives are currently used.



## Appendix 1-6

### Required Levels of Evacuation for Appliances (Except for small appliances, MVACS, and MVAC-like appliances) (40 CFR 82.156, Table 1)

Type of Appliance	Using recovery or recycling equipment manufactured or imported before 15 November 1993	Using recovery or recycling equipment manufactured or imported on or after 15 November 1993
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	0	0
HCFC-22 appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant	4	15
Very high-pressure appliance	0	0
Low-pressure appliance	25	25 mm Hg absolute



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>AIR EMISSIONS MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA    C    RMA	<b>REVIEWER COMMENTS:</b>		

## **SECTION 2**

### **Drinking Water Management**

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**The contents of this section are the minimum requirements the assessor must review. The assessor must also review applicable state and local regulations.**

## **SECTION 2**

### **DRINKING WATER MANAGEMENT**

#### **A. Applicability**

This section identifies rules, regulations, and requirements for any FWS facility that has jurisdiction over any public water supply system. A public water system is defined as a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes:

1. any collection, treatment, storage, and distribution facilities under control of the operator of such system
2. any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

A public water system is either a community water system or a noncommunity water system (40 CFR 141.2).

FWS facilities that meet all the criteria listed below are not required to comply with the requirements of the *Safe Drinking Water Act* (SDWA) since, by definition, they are not public water systems (40 CFR 141.3):

1. system consists only of distribution and storage facilities and does not have any collection and treatment facilities
2. facility gets all of its water from a public water system that is owned or operated by another party (non-FWS)
3. facility does not sell water to any party.

#### **B. Federal Legislation**

- *The Safe Drinking Water Act* (SDWA). This Act, Public Law (PL) 99-339, 42 U.S. Code (USC) 201, 300f--300j-25, 6939b, 6979a, 6979b, 7401--742, etc., is the Federal legislation which regulates the safety of drinking water in the country. Each department, agency, and instrument of the executive, legislative, and judicial branches of the Federal Government having jurisdiction over any potential source of contaminants identified by a state program must be subject to and observe all requirements of the state program applicable to such potential source of contaminants, both substantive and procedural, in the same manner, and to the same extent, as any other person, including payment of reasonable charges and fees (42 USC 300h-7(h)).

If a Federal agency has jurisdiction over any Federally owned or maintained public water system, or is engaged in any activity resulting, or which may result in, underground water injection which endangers drinking water, it is subject to, and must observe, any Federal,

state, and local regulations, administrative authorities, and process and sanctions respecting the provision of safe drinking water and respecting any underground injection program in the same manner, and to the same extent, as any nongovernmental entity. This requirement applies (42 USC 300j-6(a)):

1. to any rules substantive or procedural (including any recordkeeping or reporting, permits, and other requirements)
2. to the exercise of any Federal, state, or local authorities
3. to any process or sanction, whether enforced in Federal, state, or local courts or in any other manner.

National primary drinking water regulations apply to each public water system in each state. However, such regulations do not apply to a public water system (42 USC 300g):

1. which consists only of distribution and storage facilities (and does not have any collection and treatment facilities)
2. which obtains all its water from, but is not owned or operated by, a public water system to which such regulations apply
3. which does not sell water to any person
4. which is not a carrier which conveys passengers in interstate commerce.

- *The Federal Water Pollution Control Act*. This Act, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 USC 1251-1387, PL 100-4, governs the control of water pollution in the nation. In the following paragraphs, the major policy guidelines of this statute are summarized, the key requirements concerning Federal agencies and facilities highlighted, and the most important definitions provided. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. To achieve this objective, the following must be done (33 USC 1251):

1. the discharge of pollutants into the navigable waters be eliminated by 1985
2. wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by 1 July 1983
3. the discharge of toxic pollutants in toxic amounts be prohibited
4. Federal financial assistance be provided to construct publicly owned treatment works (POTWs)
5. areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each state
6. a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans
7. programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution.

Each department, agency, or instrument of the executive, legislative, and judicial branches of the Federal Government, and each officer, agent, or employee of such organization, must comply with all Federal, state, interstate, and local requirements, administrative authority, and process and sanctions regarding the control and abatement of water pollution in the same manner and to the same extent as any nongovernmental entity including the payment of reasonable service charges (33 USC 1323(a)).



- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

### **C. State/Local Regulations**

States have primary responsibility to enforce compliance with national primary drinking water standards and sampling, monitoring, and notice requirements in conformance with 40 CFR 141. U.S. Environmental Protection Agency (USEPA) executes the enforcement responsibilities until individual state programs are approved.

States that have primacy may establish drinking water regulations, monitoring schedules and reporting requirements more stringent than, or in addition to, those in the Federal regulations. FWS public water systems in these states are required to comply with these additional requirements. Generally speaking, most states who have primacy adopt drinking water regulations which closely reflect the Federal requirements. Almost all states have achieved authorization from USEPA to administer drinking water compliance programs including underground injection control (UIC) programs.

### **D. Key Compliance Requirements**

- Plans and Records - The facility manager must keep records of actions taken to correct or repair any part of the treatment and distribution system for at least 3 yr. Plans for water system modifications should be reviewed. Facilities are required to survey public water systems and maintain records of those reviews (GMP, 40 CFR 141.21(d) and 141.33(b)).
- Physical Requirements for Drinking Water Systems - There will not be any cross-connection, open or potential, between a system furnishing potable water and a system furnishing nonpotable water. All water systems shall install and operate optimal corrosion control treatment and/or comply with corrosion control requirements specified by the state (40 CFR 141.80(d)).
- Maximum Contaminant Level (MCL) Standards - Drinking water is to be supplied from sources approved by Federal, State, or local health authorities, or treated to specific standards. Community water systems, Noncommunity water systems, except as defined under exempted water systems, and Community and nontransient, noncommunity water systems are required to meet specific MCLs for organic, inorganic, and microbiological contaminants. These are outlined in Appendix 2-1 and Appendix 2-2 (40 CFR 141.11(a) through 141.11(c), 141.12, 141.15, 141.16(a), and 141.60 through 141.63).
- Monitoring - The monitoring schedule and what constituents are to be monitored is based on what type of facility being operated. Facilities with community water systems and/or nontransient, noncommunity water systems are required to monitor for inorganic contami-

nants. All public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels. Monitoring for Endrin is required to be done according to specific schedules. Community and noncommunity water systems are required to monitor for total coliforms and facilities are required to monitor for radioactivity in community water systems (40 CFR 141.21(a), 141.23, 141.24, and 141.26).

- **Total Coliform and Turbidity Sampling** - Total Coliform samples are required to be collected at regular intervals throughout the month except at systems that use only groundwater and serve 4900 people or fewer. Public water systems that use surface water or groundwater under the direct influence of surface water and do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result. Sampling for turbidity is required to be done at public water systems that use water obtained in whole or part from surface water sources, according to a specific schedule and processes reported (40 CFR 141.21 and 141.22).
- **Water Analysis** - Facilities with community water systems that add a disinfectant to the water are required to analyze for total trihalomethanes (TTHMs). Suppliers of water for community public water systems are required to analyze for sodium, and collect samples from representative entry points to the water distribution system and analyze for corrosivity. Bacteriological analysis of samples used to determine compliance with MCLs must be performed in a state-approved lab or by a state-approved individual (40 CFR 141.28, 141.30, 141.41 and 141.42).
- **Filtration and Disinfection** - Facilities that have a public water system that uses surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants which meets specific standards, provide disinfection treatment by 29 June 1993, and report specific information monthly to the state starting 29 June 1993, or when filtering.
- **Notification and Reporting Requirements** - Records of chemical analyses are required to be kept for not less than 10 yr. When Primary Drinking Water Standards are Exceeded, public notifications must be made. Facilities that operate public water systems must send reports to the state on any failure to comply with the applicable biological, turbidity, radioactivity, and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31, 141.32, and 141.33(a)).
- **Lead and Copper in Drinking Water Systems** - Facilities with community or nontransient, noncommunity water systems must notify their users about lead in drinking water systems and must meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded. Facilities with water systems exceeding the lead action level after the implementation of corrosion control and source water treatment requirements are required to replace lead service lines. Monitoring for lead and copper is required to start on a specified date, be done at a specified number of sites, fulfill specific reporting requirements, and retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80 through 141.90).

## **E. Key Compliance Definitions**

- **Active Sewage Sludge Unit** - a sewage sludge unit that has not closed (40 CFR 503.21(a)).
- **Aerobic Digestion** - the biochemical decomposition of organic matter in sewage sludge into CO<sub>2</sub> and water by microorganisms in the presence of air (40 CFR 503.31(a)).
- **Agricultural Land** - land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture (40 CFR 503.11(a)).
- **Agronomic Rate** - the whole sludge application rate (dry weight basis) designed (40 CFR 503.11(b)):
  1. to provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land
  2. to minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater.
- **Air Pollution Control Device** - one or more processes used to treat the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(a)).
- **Anaerobic Digestion** - the biochemical decomposition of organic matter in sewage sludge into methane gas and CO<sub>2</sub> by microorganisms in the absence of air (40 CFR 503.31(b)).
- **Annual Pollutant Loading Rate** - the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period (40 CFR 503.11(c)).
- **Annual Whole Sludge Application Rate** - the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period (40 CFR 503.11(d)).
- **Apply Sewage Sludge or Sewage Sludge Applied To The Land** - means land application of sewage sludge (40 CFR 503.9(a)).
- **Aquifer** - a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding ground water to wells or springs (40 CFR 503.21(b)).
- **Auxiliary Fuel** - fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel (40 CFR 503.41(b)).
- **Base Flood** - a flood that has a one percent chance of occurring in any given year (i.e., a flood with a magnitude equalled once in 100 yr) (40 CFR 503.9(b)).
- **Best Available Technology. (BAT)** - the best technology treatment techniques, or other means which the administrator finds, examined for efficacy under field conditions and not solely under lab conditions that are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon (40 CFR 141.2).

- **Coagulation** - a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs (40 CFR 141.2).
- **Community Water System** - a public water system that serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents (40 CFR 141.2)
- **Contaminant** - any physical, chemical, biological, or radiological substance or matter in water (40 CFR 141.2).
- **Conventional Filtration Treatment** - a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal (40 CFR 141.2).
- **Diatomaceous Earth Filtration** - a process resulting in substantial particulate removal in which (40 CFR 141.2):
  1. a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum)
  2. while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.
- **Direct Filtration** - a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal (40 CFR 141.2).
- **Disinfectant** - any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic micro-organisms (40 CFR 141.2).
- **Disinfection** - a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents (40 CFR 141.2).
- **Domestic or Other Non-Distribution System Plumbing Problem** - a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken (40 CFR 141.2).
- **Exempted Public Water Systems** - the following are public water systems which are not required to meet the standards outlined in 40 CFR 141 (40 CFR 141.3):
  1. systems which consist only of distribution and storage facilities and do not have any collection and treatment facilities
  2. systems that obtain all of their water from, but is not owned by or operated by, a public water system to which 40 CFR 141 applies
  3. systems that do not sell water to any person
  4. systems that are not a carrier that conveys passengers in interstate commerce.
- **Filtration** - a process for removing particulate matter from water by passage through porous media (40 CFR 141.2).

- **Flocculation** - a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means (40 CFR 141.2).
- **Good Management Practice (GMP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Gross Alpha Particle Activity** - the total radioactivity due to alpha particle emissions as inferred from measurements on a dry sample (40 CFR 141.2).
- **Groundwater Under the Direct Influence of Surface Water** - refers to any water beneath the surface of the ground with:
  1. significant occurrence of insects or other macro-organisms, algae, or large diameter pathogens such as *Giardia lamblia*
  2. significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

Direct influence must be determined for individual sources in accordance with criteria established by the state (40 CFR 141.2).

- **Halogen** - one of the chemical elements chlorine, bromine, or iodine (40 CFR 141.2).
- **Initial Compliance Period** - the first full 3 yr compliance period which begins at least 18 mo after promulgation, except for Dichloromethane, 1,2,4-Trichlorobenzene, 1,1,2-Trichloroethane, Benzo(a)pyrene, Dalapon, Di(2-ethylhexyl) adipate, Di(2-ethylhexyl) phthalate, Dinoseb, Diquat, Endrin, Endothall, Glyphosate, Hexachlorobenzene, Hexachlorocyclopentadiene, Oxamyl (Vydate), Picloram, Simazine, 2,3,7,8-TCDD (Dioxin), Antimony, Beryllium, Cyanide (as free Cyanide), Nickel, and Thallium, initial compliance period means the first full 3 yr compliance period after promulgation for systems with 150 or more service connections (January 1993 - December 1995, and first full 3 yr compliance period after the effective date of the regulation (January 1996 - December 1998) for systems having fewer than 150 service connections (40 CFR 141.2).
- **Large Water System** - in reference to lead and copper in systems, this refers to a water system that serves more than 50,000 persons (40 CFR 141.2).
- **Lead Service Line** - a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting which is connected to such a lead line (40 CFR 141.2).
- **Legionella** - means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease (40 CFR 141.2).
- **Maximum Contaminant Level (MCL)** - the maximum permissible level of a contaminant in water that is delivered to any user of a public water system (40 CFR 141.2).

- **Maximum Contaminant Level Goal (MCLG)** - refers to the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MCLGs are nonenforceable health goals (40 CFR 141.2).
- **Maximum Total Trihalomethane (TTHM) Potential** - means the maximum concentration of TTHM produced in a given water containing a disinfectant residual after 7 days at a temperature of 25 °C or above (40 CFR 141.2).
- **Medium Size Water System** - in reference to lead and copper in systems, this refers to a water system that serves greater than 3300 and less than or equal to 50,000 persons (40 CFR 141.2).
- **Near the First Service Connection** - means at one of the 20 percent of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system (40 CFR 141.2).
- **Noncommunity Water System** - a public water system that is not a community water system (40 CFR 141.2).
- **Nontransient, Noncommunity Water System (NTNCWS)** - a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 mo/yr (40 CFR 141.2).
- **Person** - an individual, corporation, company, association, partnership, municipality, or state, Federal, or tribal agency (40 CFR 141.2).
- **PicoCurie (pCi)** - quantity of radioactive material producing 2.22 nuclear transformations/min (40 CFR 141.2).
- **Point of Disinfectant Application** - the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff (40 CFR 141.2).
- **Point-of-Entry Treatment Device** - a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building (40 CFR 141.2).
- **Point-of-Use Treatment Device** - a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap (40 CFR 141.2).
- **Public Water System** - a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes:
  1. any collection, treatment, storage, and distribution facilities under control of the operator of such system
  2. any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

A public water system is either a community water system or a noncommunity water system (40 CFR 141.2).

- *Rem* - the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is 1/1000 of a rem (40 CFR 141.2).
- *Residual Disinfectant Concentration* - ("C" in CT calculations) is the concentration of disinfectant measured in mg/L in a representative sample of water (40 CFR 141.2).
- *Sanitary Survey* - an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water (40 CFR 141.2).
- *Sedimentation* - a process for removal of solids before filtration by gravity or separation (40 CFR 141.2).
- *Slow Sand Filtration* - a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 m/h [1.31 ft/h]) resulting in substantial particulate removal by physical and biological mechanisms (40 CFR 141.2).
- *Standard Sample* - the aliquot of finished drinking water that is examined for the presence of coliform bacteria (40 CFR 141.2).
- *State* - the agency of the state or tribal government that has jurisdiction over public water systems. During any period when a state or tribal government does not have primary enforcement responsibility pursuant to Section 1413 of the SDWA (42 USC 300g-2), the term state means the Regional Administrator of the USEPA (40 CFR 141.2).
- *Supplier of Water* - any person who owns or operates a public water system (40 CFR 141.2).
- *Surface Water* - all water that is open to the atmosphere and subject to surface runoff (40 CFR 141.2).
- *System with a Single Service Connection* - a system which supplies drinking water to consumers via a single service line (40 CFR 141.2).
- *Total Trihalomethanes (TTHM)* - the sum of the concentration in milligrams per liter of the trihalomethane compounds rounded to two significant figures (40 CFR 141.2).
- *Trihalomethane (THM)* - one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure (40 CFR 141.2).
- *Virus* - means a virus of fecal origin which is infectious to humans by waterborne transmission (40 CFR 141.2).

- ***Waterborne Disease Outbreak*** - the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or state agency (40 CFR 141.2).



**DRINKING WATER MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
All Facilities	2-1 through 2-5	15
Drinking Water		
General Requirements	2-6 through 2-9	17
Standards	2-10 through 2-12	19
Monitoring/Sampling of Drinking Water	2-13 through 2-32	21
Disinfection and Filtration	2-33 through 2-40	33
Notification and Reporting Requirements	2-41 through 2-44	41
Lead and Copper in Drinking Water Systems	2-45 through 2-56	43
Sole Source Aquifer	2-57	49



## **DRINKING WATER MANAGEMENT**

### **Records to Review**

- Bacterial and chemical analyses of drinking water, including sampling dates and locations, dates of analyses, analytical methods used, and results of analyses
- Monthly operating reports (flow, chlorine residual, etc.)
- State and public notification of noncompliance with primary drinking water regulations
- Action taken by the facility to correct violations of primary drinking water regulations
- Sanitary surveys of the water system conducted by the facility itself, a private consultant, or any local, state, or the FWS
- Public notification of noncompliance with secondary MCL for fluoride
- Variance or exemption granted to the facility for its water supply system
- Permit authorizing the operation of an underground injection well
- Records of planning and construction of injection wells
- Results of injection well monitoring
- Records, including any petition for review, of facility projects that may potentially cause contamination of a sole source aquifer through its recharge zone
- Waivers from the state

### **Physical Features to Inspect**

- Records of planning and construction of injection wells
- Laboratory analysis facilities
- Underground injection well



**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL FACILITIES</b></p> <p><b>2-1.</b> Actions or changes since previous review of drinking water quality management should be examined (GMP).</p> <p><b>2-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on water quality should be available at the facility (GMP).</p> <p><b>2-3.</b> FWS facilities are required to comply with state and local water quality regulations (EO 12088, Section 1-1 and 42 USC 300h-7(h)).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>Verify that the following documents are on file:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards</i>.</li> <li>- 40 CFR 141, <i>National Primary Drinking Water Regulations</i>.</li> <li>- 40 CFR 142, <i>National Primary Drinking Water Regulations Implementation</i>.</li> <li>- 40 CFR 149, <i>Sole Source Aquifers</i>.</li> <li>- appropriate state and local regulations.</li> </ul> <p>Verify that the facility is complying with state and water air quality requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- more stringent contaminant level requirements certification and training requirements</li> <li>- water system surveys</li> <li>- reporting requirements</li> <li>- monitoring frequency</li> <li>- use of groundwater</li> <li>- use and maintenance of wells</li> <li>- wellhead protection programs</li> <li>- cross connection control and backflow prevention</li> <li>- O&amp;M practices such as: maintenance of a disinfectant residual throughout the distribution system; proper maintenance of the distribution system; proper disinfection of replaced or repaired mains; main flushing</li> <li>- UIC programs.)</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>2-4. Facilities will meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning water quality have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p>2-5. FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).</p>	<p>Determine if the facility has received an NOV relating to drinking water.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>DRINKING WATER</b></p> <p><b>General Requirements</b></p> <p>2-6. The facility and project manager must keep records of actions taken to correct or repair any part of the treatment and distribution system for at least 3 yr (40 CFR 141.33(b)).</p> <p>2-7. The Regional Engineer should review plans for water system modifications (GMP).</p> <p>2-8. Facilities are required to survey public water systems according to a specified schedule and maintain records of those reviews (40 CFR 141.21(d) and 141.33 (c)).</p>	<p>Determine if facility or operational changes to the water system have taken place since the previous review. Review map of complete potable water system.</p> <p>Verify that as-built drawings are updated to reflect changes in water supply.</p> <p>Determine if there have been operational changes by examining water system records.</p> <p>Verify that water system records are maintained for at least 3 yr.</p> <p>Determine if there are recurring work programs, spare parts and supplies list, equipment calibration, and maintenance history records.</p> <p>Determine if the Regional Engineer has reviewed the plans.</p> <p>Verify that noncommunity water systems which do not collect five or more routine samples per month have undergone an initial sanitary survey by 29 June 1999 and are then surveyed every 5 yr thereafter.</p> <p>(NOTE: Noncommunity water systems using only protected and disinfected groundwater are only required to conduct a survey every 10 yr after the initial survey.)</p> <p>Verify that records of sanitary system surveys are kept for 10 yr.</p> <p>Verify that the results of the sanitary surveys have been submitted to the state and determine whether the state has requested an alternate monitoring frequency.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

2-9. All public water systems shall install and operate optimal corrosion control treatment and/or comply with corrosion control requirements specified by the state (40 CFR 141.80(d)).

**REVIEWER CHECKS:**

Verify that public water systems are operating corrosion control systems and/or meeting state requirements.



COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<b>DRINKING WATER</b>	
<b>Standards</b>	
<p><b>2-10.</b> Community water systems, except as defined under exempted water systems in the definitions, are required to meet specific MCLs for inorganic and organic chemicals, fluorides, radium 226, radium-228, gross alpha particle radioactivity, beta particles and photon radioactivity from man-made radionuclides (40 CFR 141.11(a) through 141.11(c), 141.12, 141.15, and 141.16(a)).</p>	<p>Verify that combined radium-226 and radium-228 do not exceed 5 pCi/L.</p> <p>Verify that gross alpha particle radioactivity does not exceed 15 pCi/L.</p> <p>Verify that the average annual concentration of beta particles and photon radioactivity from manmade radionuclides does not produce an average dose rate equal to the total body or any internal organ greater than 4 mrem/yr.</p> <p>Verify that the MCL of 4.0 mg/L for fluoride is not exceeded.</p> <p>Verify that the MCLs outlined in Appendix 2-1 and Appendix 2-2 are met.</p>
<p><b>2-11.</b> Noncommunity water systems, except as defined under exempted water systems, will not exceed a MCL for nitrate of 10 mg/L (40 CFR 141.11(a)).</p>	<p>Verify that the nitrate level at noncommunity water systems does not exceed 10 mg/L.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-12.</b> Community and nontransient, noncommunity water systems, except as defined under exempted water systems, are required to meet specific MCLs for organic contaminants, inorganic contaminants and microbiological contaminants (40 CFR 141.60 through 141.63).</p>	<p>Verify that the standards outlined in Appendix 2-1 and Appendix 2-2 are met.</p> <p>Verify that systems which collect at least 40 bacteriological samples per month have no more than 5 percent of the samples collected during a month that are total coliform positive.</p> <p>Verify that systems which collect less than 40 bacteriological samples per month have no more than one sample collected per month that is total coliform positive.</p> <p>Verify that there are no fecal coliform-positive repeat sampling or <i>Escherichia coli</i>-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or <i>E. coli</i>-positive routine sample.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MONITORING/ SAMPLING OF DRINKING WATER</b></p> <p><b>2-13.</b> Facilities with community water systems and/or nontransient, noncommunity water systems are required to meet specific monitoring requirements for inorganic contaminants (40 CFR 141.23(a)).</p>	<p>Verify that groundwater systems:</p> <ul style="list-style-type: none"> <li>- take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment beginning in the compliance period starting 1 January 1993</li> <li>- takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.</li> </ul> <p>Verify that surface water systems take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point that is representative of each source.</p> <p>(NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>(NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit.)</p> <p>Verify that, if the concentration in a composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, a followup sample is analyzed within 14 days from each sampling point included in the composite.</p> <p>(NOTE: Detection limits for each analytical methods and MCLs for each inorganic contaminant are listed in Appendix 2-3.)</p> <p>Verify that for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if a MCL is violated.</p> <p>Verify that for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if a MCL is violated.</p> <p>(NOTE: The state may issue a waiver reducing the required monitoring.)</p>

<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-14.</b> Facilities with community and non-transient, noncommunity water systems are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).</p>	<p>Verify that asbestos is monitored during the first 3 yr compliance period of each 9 yr compliance cycle starting 1 January 1993.</p> <p>(NOTE: The facility may apply to the state for a waiver of monitoring if they believe that asbestos is not an issue.)</p> <p>Verify that, if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.</p> <p>Verify that, if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.</p> <p>Verify that when the MCL is exceeded, monitoring is done quarterly.</p>
<p><b>2-15.</b> Facility with community water systems and/or nontransient, noncommunity water systems are required to meet specific monitoring requirements for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium (40 CFR 141.23(c)).</p>	<p>Verify that monitoring is done as follows:</p> <ul style="list-style-type: none"> <li>- groundwater systems               <ul style="list-style-type: none"> <li>- take one sample at each sampling point every 3 yr</li> </ul> </li> <li>- surface water systems (or combined surface/ground)               <ul style="list-style-type: none"> <li>- take one sample annually at each sampling point when MCLs are exceeded, monitoring is done quarterly.</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-16.</b> All public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23(e)).</p>	<p>Verify that the following schedules are met for monitoring of nitrate:</p> <ul style="list-style-type: none"> <li>- community and nontransient, noncommunity water systems served by groundwater monitor annually (starting 1 January 1993)</li> <li>- community and nontransient, noncommunity water systems served by surface water monitor quarterly (starting 1 January 1993)</li> <li>- transient noncommunity water systems monitor annually (starting 1 January 1993).</li> </ul> <p>Verify that when the MCL for nitrate are exceeded the following schedules are met for monitoring:</p> <ul style="list-style-type: none"> <li>- community and nontransient, noncommunity water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL.</li> </ul> <p>(NOTE: After the initial round of quarterly sampling is completed, each community and nontransient noncommunity system which is monitoring annually shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.)</p> <p>Verify that public water systems take one sample at each sampling point in the compliance period beginning 1 January 1993 and ending 31 December 1995 for nitrite.</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that community, nontransient, noncommunity and transient noncommunity systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL.</p> <p>Verify that systems which are monitoring annually for nitrites take each subsequent sample during the quarters which previously resulted in the highest analytical result.</p> <p>Verify that when nitrate or nitrite samples indicate an exceedence of the MCL, a confirmation sample is taken within 24 h of receipt of the results.</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, the public water system must notify consumers of the exceedence.)</p>

<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-17.</b> Monitoring for Endrin is required to be done according to specific schedules (40 CFR 141.24(a) through 141.24(d)).</p>	<p>Verify that community water systems using surface water sources have completed endrin analyses by 30 July 1993.</p> <p>(NOTE: For community water systems, samples will be taken during the time of the year designated by the state as most likely for pesticide contamination and the analyses repeated at intervals specified by the state but no less frequently than every 3 yr.)</p> <p>Verify that when the MCL is exceeded the state is notified within 7 days and three additional analyses are initiated within 1 mo.</p> <p>Verify that when an average of four analyses exceeds the MCL the facility must report to the state and give notice to the public and continue to monitor at a frequency designated by the state.</p> <p>(NOTE: Instead of the initial analyses, data for surface water acquired within 1 yr prior to 30 July 1992 and data for groundwater acquired within 3 yr of 30 July 1992 may be substituted at the discretion of the state.)</p>
<p><b>2-18.</b> Beginning with the initial compliance period, monitoring of the contaminants listed in Table 2 of Appendix 2-1 at community and nontransient, noncommunity water systems is required to be done according to specific parameters (40 CFR 141.24(f)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or combined surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each community and nontransient noncommunity water system takes four consecutive quarterly samples for each contaminant, except vinyl chlorides.</p> <p>(NOTE: If the initial monitoring for contaminants is completed by December 1992 and none of the contaminants listed are found, then each system shall take one sample annually starting with the initial compliance period.)</p>

<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>2-18. (continued)</b>	<p>(NOTE: After a minimum of 3 yr of sampling, the state may reduce the number of sample to one each compliance period.)</p> <p>Verify that, if a contaminant, except vinyl chloride, is detected at a level exceeding 0.0005 mg/L in any sample, the system monitors quarterly at each sampling point which resulted in a detection.</p> <p>Verify that groundwater systems which have detected one or more of the following two-carbon organic compounds; trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene monitor quarterly for vinyl chlorides at each sampling point at which one or more of the two-carbon organic compounds was detected.</p> <p>Verify that when the MCLs are exceeded, monitoring is conducted quarterly until the state determines that the system is reliably and consistently below the MCL.</p>
<b>2-19. Monitoring for organic contaminants listed in Table 3 of Appendix 2-1 at community water systems and nontransient, non-community water systems is required to be done according to specific parameters (40 CFR 141.24(h)).</b>	<p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each community and nontransient, noncommunity water system takes four consecutive quarterly samples for each contaminant during each compliance period starting 1 January 1993.</p> <p>(NOTE: Systems serving more than 3300 persons which do not detect a contaminant in the initial compliance period may reduce sampling to two quarterly samples in one year during each repeat compliance period.)</p> <p>(NOTE: Systems serving less than or equal to 3300 person that do not detect a contaminant in the initial compliance period may reduce sampling to one sample during each repeat compliance period.)</p>

<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>									
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>								
<b>2-19. (continued)</b>	<p>Verify that when an organic contaminant is detected (see Appendix 2-4), the system monitors quarterly at each sampling point that resulted in a detection.</p> <p>Verify that, if monitoring results in detection of one or more of aldicarb, aldicarb sulfone, aldicarb sulfoxide, and heptachlor, heptachlor epoxide, then subsequent monitoring analyzes for all related contaminants.</p> <p>(NOTE: The state may reduce the number of samples required and/or the frequency of sampling.)</p>								
<b>2-20. Community and nontransient, noncommunity water systems are required to monitor for specific organic and inorganic contaminants (40 CFR 141.35 and 141.40(a) through 141.40(m)).</b>	<p>Verify that monitoring is being done for the following contaminants: chloroform; bromodichloromethane; bromoform; chlorodibromomethane; chlorobenzene; m-dichlorobenzene; 1,1-dichloropropene; 1,1-dichloroethane; 1,1,2,2-tetrachloroethane; 1,3-dichloropropane; chloromethane; bromomethane; 1,2,3-trichloropropane; 1,1,1,2-tetrachloroethane; chloroethane; 2,2-dichloropropane; o-chlorotoluene; p-chlorotoluene; bromobenzene; 1,3-dichloropropene.</p> <p>Verify that surface water systems sample at points in the distribution system that are representative of each water source or at entry point to the distribution system after any application of treatment.</p> <p>Verify that for surface water systems, the minimum number of samples taken is 1 yr of quarterly samples per water system.</p> <p>Verify that groundwater systems sample at points of entry to the distribution system, representative of each well after any application of treatment.</p> <p>Verify that initial monitoring was done by the dates specified in the following, and that all community and nontransient, noncommunity water systems repeat the monitoring every 5 yr after the specified dates:</p> <table border="0"> <tr> <td>Number of persons served</td> <td>Monitoring to Begin No Later Than:</td> </tr> <tr> <td>over 10,000</td> <td>1 January 1988</td> </tr> <tr> <td>3300 to 10,000</td> <td>1 January 1989</td> </tr> <tr> <td>less than 3300</td> <td>1 January 1991</td> </tr> </table> <p>(NOTE: Public water systems may use monitoring data collected any time after 1 January 1983 to meet the requirements for unregulated monitoring, provided the monitoring program was consistent with these requirements. Additionally the results of USEPA's Groundwater Supply Survey may be used in a similar manner for systems supplied by a single well.)</p> <p>(NOTE: The state may require monitoring of additional contaminants.)</p>	Number of persons served	Monitoring to Begin No Later Than:	over 10,000	1 January 1988	3300 to 10,000	1 January 1989	less than 3300	1 January 1991
Number of persons served	Monitoring to Begin No Later Than:								
over 10,000	1 January 1988								
3300 to 10,000	1 January 1989								
less than 3300	1 January 1991								



<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>2-20. (continued)</b>	<p>(NOTE: Instead of doing the monitoring required here, a community water system or nontransient, noncommunity water system serving fewer than 150 service connections may send a letter to the state by 1 January 1991 stating that the system is available for sampling.)</p> <p>Verify that the facility notifies the systems users of the availability of the results of sampling.</p> <p>Verify that the facility sends copies of the monitoring results within 30 days after public notification.</p>
<b>2-21. Monitoring of specific contaminants must be completed by 31 December 1995 (40 CFR 141.35 and 141.40(n)).</b>	<p>Verify that the substances listed in Appendix 2-5 are monitored for by 31 December 1995.</p> <p>Verify that each community and nontransient, noncommunity water systems takes four consecutive quarterly samples for the unregulated organic contaminants listed in Appendix 2-5 at each sampling point and reports the results to the state.</p> <p>Verify that each community and nontransient noncommunity water system takes one sample at each sampling points for the unregulated inorganic compounds listed in Appendix 2-5 and reports the results to the state.</p> <p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment.</p> <p>Verify that surface water systems, including systems with a combination of surface and ground sources, take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment.</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at the entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that the facility notifies the systems users of the availability of the results of sampling.</p> <p>Verify that the facility sends copies of the monitoring results within 30 days after public notification.</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-22.</b> Community water systems, except as defined as exempted water systems, are required to monitor for total coliforms at a frequency based on the population served by the system (40 CFR 141.21(a)(2)).</p>	<p>Verify that the facilities community water systems is sampling according to the schedule in Appendix 2-6.</p>
<p><b>2-23.</b> Noncommunity water systems, except as defined under exempted water systems, are required to monitor for total coliforms according to a specific schedule (40 CFR 141.21(a)(3)).</p>	<p>Verify that noncommunity water systems using only groundwater (except groundwater under the direct influence of surface water) and serving 1000 persons or less monitors each calendar quarter the system provides water to the public.</p> <p>Verify that the following noncommunity water systems are monitoring for total coliforms according to the schedule outlined in Appendix 2-6:</p> <ul style="list-style-type: none"> <li>- systems using only groundwater (except groundwater under the direct influence of surface water) and serving more than 1000 persons during any month</li> <li>- systems using surface water, in total or in part</li> <li>- systems using groundwater under the direct influence of surface water.</li> </ul>
<p><b>2-24.</b> Total coliform samples are required to be collected at regular time intervals throughout the month except at system which use only groundwater and serves 4900 person or fewer (40 CFR 141.21(a)(4)).</p>	<p>Verify that total coliform samples are collected at regular intervals.</p> <p>(NOTE: Systems which use groundwater (except groundwater under the influence of surface water) and serves 4900 persons or fewer may collect all required samples on a single day if they are being taken from different sites.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-25.</b> Public water systems that use surface water or groundwater under the direct influence of surface water that do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU (40 CFR 141.21 (a)(5)).</p> <p><b>2-26.</b> When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result (40 CFR 141.21(b)(1) through 141.21(b)(4) and 141.21(e)(1)).</p>	<p>Verify that when the turbidity exceeded 1 NTU, total coliform samples were taken within 24 h of the first exceedence by reviewing the records on turbidity levels.</p> <p>Verify that, if more than one routine sample per month is collected, at least three repeat samples are taken for each total coliform-positive sample found.</p> <p>Verify that, if one or less routine sample per month is collected, no less than four repeat samples are collected for each total coliform-positive sample found.</p> <p>Verify that at least one of the repeat samples is collected from the sampling tap where the original total coliform positive sample was taken.</p> <p>Verify that at least one repeat sample was taken at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site.</p> <p>Verify that the sampling process is repeated until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms is exceeded and the state is notified.</p> <p>Verify that all repeat samples are collected on the same day.</p> <p>Verify that, if one or more of the repeat samples is total coliform-positive, an additional set of repeat samples is collected within 24 h of notification of the positive result.</p> <p>Verify that, if a repeat sample is total coliform-positive, it is also analyzed for fecal coliforms.</p> <p>(NOTE: The system may test for <i>E. coli</i> instead of fecal coliforms.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-27.</b> Sampling for turbidity is required to be done at public water systems which must install filtration according to a specific schedule until the time at which the systems installs filtration (40 CFR 141.22)</p>	<p>Verify that suppliers of water for both community and noncommunity water systems sample for turbidity at a representative entry point to the water distribution system at least once daily.</p> <p>Verify that when the turbidity levels are exceeded immediate resampling is done.</p> <p>Verify that the state is notified within 48 h.</p> <p>(NOTE: These systems must monitor for turbidity according to 40 CFR 141.73 and 141.74. See checklist items 2-34, 2-36, and 2-40.)</p>
<p><b>2-28.</b> Facilities are required to monitor for radioactivity in community water systems (40 CFR 141.26).</p>	<p>Verify that compliance for standards of gross alpha particle activity, radium-226 and radium-228 are based on an annual composite of four consecutive samples that are obtained at quarterly intervals or the average of the analyses of four samples obtained at quarterly intervals.</p> <p>(NOTE: A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis if the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 percent.)</p> <p>Verify that when the gross alpha particle activity exceeds 5 pCi/l the same or an equivalent sample is analyzed for radium-226 and if the concentration of radium-226 exceeds 3 pCi/L, the same or equivalent sample is analyzed for radium-228.</p> <p>Verify that suppliers of water monitor for gross alpha particle activity, radium-226 and radium-228 every 4 yr and within 1 yr of the introduction of a new water source for a community water system.</p> <p>(NOTE: The state has the power to order additional samples, waive required samples and impose additional requirements.)</p> <p>Verify that if the MCL for gross alpha particle activity or total radium is exceeded and the facility is the supplier of a community water system, the facility notifies the state and the public of the exceedence.</p> <p>Verify that systems using surface water sources and serving more than 100,000 persons are initially monitored quarterly for compliance with man-made radioactivity limitations and after the initial analysis, monitoring is done at least every 4 yr.</p> <p>Verify that suppliers of any community water system using waters contaminated by nuclear facilities initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>2-29. Facilities with community water systems that add a disinfectant to the water are required to analyze for TTHMS (40 CFR 141.30).</p>	<p>(NOTE: The minimum number of samples that is required is based on the number of treatment plants used by the system.)</p> <p>Verify that community water systems serving a population of 10,000 or more individuals that add a disinfectant to the water and are using surface water sources or using only groundwater sources analyze for TTHMS on a quarterly basis on at least four samples.</p>
<p>2-30. Suppliers of water for community public water systems are required to analyze for sodium (40 CFR 141.41).</p>	<p>Verify that one sample is taken per plant at the entry point of the distribution system annually for systems using surface water in whole or in part and every 3 yr for systems using solely groundwater sources.</p> <p>Verify that the results of the sampling were reported to the USEPA and/or state within 10 days following the end of the required monitoring period or within the first 10 days of the month following the month in which the sample was taken.</p>
<p>2-31. Suppliers of water for community water systems shall collect samples from representative entry points to the water distribution system and analyze for corrosivity (40 CFR 141.42).</p>	<p>Verify that the supplier collects two samples per plant for analyses for each plant using surface water sources wholly or in part.</p> <p>Verify that the samples are taken one in mid-winter and one during mid-summer.</p> <p>Verify that one sample per plant is collected for each plant using groundwater sources.</p> <p>(NOTE: Determination of corrosivity includes measurement of pH, calcium, hardness, alkalinity, temperature, total dissolved solids, and calculation of the Langelier Index.)</p> <p>Verify that the results for the analyses of corrosivity are reported to the USEPA and/or state within the first 10 days of the month following the month in which the sample results were received.</p> <p>(NOTE: The state might require monitoring for additional parameters which may indicate corrosivity, such as sulfates and chlorides.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-32.</b> Analysis for inorganic chemicals, volatile organic contaminants, pesticides, and bacteria to determine compliance with MCLs must be performed in a state-approved laboratory or by a state-approved individual (40 CFR 141.23 (k)(5), 141.24(f)(17), 141.24(l)(19), and 141.28).</p>	<p>Verify that laboratory is approved by reviewing documentation of state certification for laboratory analysis.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>DISINFECTION AND FILTRATION</b></p> <p>2-33. Facilities that have a public water system that uses surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants unless certain criteria are met (40 CFR 141.71(a) and 141.71 (b)).</p>	<p>(NOTE: Public water systems that use a groundwater source under the direct influence of surface are not required to meet these conditions to avoid filtration until 18 mo after the state has determined that the facility is under the direct influence of surface water.)</p> <p>Verify that filtration of drinking water is performed unless all of the following conditions for surface water are met:</p> <ul style="list-style-type: none"> <li>- the fecal coliform concentration is less than or equal to 20/100 mL or total coliform concentration is equal to or less than 100/100 mL in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 percent of the measurement made in the last 6 mo that the system served water to the public on an ongoing basis</li> <li>- the turbidity level does not exceed 5 NTU in representative samples of the source water immediately prior to the first or only point of disinfectant application the unless state determines otherwise and there has not been more than two events in the past 12 mo the system served water to the public or more than five events in the past 120 mo the system served water to the public.</li> </ul>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-33. (continued)</b></p>	<p>Verify that filtration of drinking water is done unless all the following site specific conditions are met:</p> <ul style="list-style-type: none"> <li>- meets the requirements of 40 CFR 141.72(a)(1) (see checklist item 2-35) for disinfection treatment of <i>Giardia lamblia</i> for at least 11 of the 12 previous months</li> <li>- meets 40 CFR 141.72(a)(2) through 141.72(a)(4) (see checklist item 2-35) at all times</li> <li>- maintains a watershed control program for <i>Giardia lamblia</i> in the source water, including: <ul style="list-style-type: none"> <li>- identification of watershed characteristics</li> <li>- monitoring occurrence of activities that have adverse effects</li> <li>- demonstrates through ownership and/or written agreements that the control of adverse effects of human activities are regulated</li> <li>- submits annual reports to the state</li> <li>- subject to annual onsite inspection by the state or a party approved by the state, to assess watershed control program</li> <li>- has not been identified as a source of waterborne disease or threat or has been modified sufficiently to prevent recurrence.</li> </ul> </li> <li>- complies with MCL for total coliforms as defined in 40 CFR 141.63 for at least 11 of the previous 12 mo (see Appendix 2-1)</li> <li>- complies with requirements for THMS as listed on 40 CFR 141.12 and 141.13 (see Appendix 2-1).</li> </ul>
<p><b>2-34. Facilities that do not meet the criteria necessary for exclusion from filtration for public water systems that use a surface water source or a groundwater source under the direct influence of surface water must provide filtration that meets specific standards by 29 June 1993, or within 18 mo after being required to provide filtration, whichever is later (40 CFR 141.73 and 141.74(c)(2)).</b></p>	<p>Verify that, if conventional or direct filtration is used, the following are met:</p> <ul style="list-style-type: none"> <li>- a turbidity level of 0.5 NTU or less in 95 percent of measurements taken each month</li> <li>- the turbidity level of representative samples of filtered water at no time exceeds 5 NTU.</li> </ul> <p>Verify that, if slow sand filtration is used, the following are met:</p> <ul style="list-style-type: none"> <li>- the turbidity level of representative samples of a systems filtered water is 1 NTU or less in 95 percent of the monthly measurements</li> <li>- the turbidity level of representative samples of a systems filtered water at no time exceeds 5 NTU.</li> </ul> <p>Verify that, if diatomaceous earth filtration is used, the following is met:</p> <ul style="list-style-type: none"> <li>- the turbidity level of representative samples of a systems filtered water is less than or equal to 1 NTU in at least 95 percent of the measurements taken each month</li> <li>- the turbidity level of representative samples of a systems filtered water at no time exceeds 5 NTU.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>										
2-34. (continued)	<p>Verify that, if other filtration technologies are used, they have been approved by the state.</p> <p>Verify that, starting 29 June 1993, or when filtration is installed, turbidity measurements are performed on representative samples of the systems filtered water every 4 h that the system serves water to the public.</p> <p>Verify that as of 29 June 1993, or whenever filtration is installed, the residual disinfectant concentration of water entering the distribution system is monitored continuously and the lowest value recorded each day.</p> <p>Verify that, if there is a failure in the continuous monitoring equipment, grab sampling is done every 4 h.</p> <p>(NOTE: Grab sampling can be done for no more than 5 working days following the failure of the continuous monitoring system.)</p> <p>(NOTE: Systems serving 3300 or fewer person can use grab sampling instead of continuous monitoring if the following daily frequencies are met:</p> <table> <thead> <tr> <th>System size by population</th><th>Samples/day</th></tr> </thead> <tbody> <tr> <td>≤ 500</td><td>1</td></tr> <tr> <td>501 to 1000</td><td>2</td></tr> <tr> <td>1001 to 2500</td><td>3</td></tr> <tr> <td>2501 to 3300</td><td>4.)</td></tr> </tbody> </table> <p>Verify that any time the residual disinfectant concentration falls below 0.2 mg/L in a system using grab sampling, the system takes a grab sample every 4 h until the residual disinfectant concentration is equal to or greater then 0.2 mg/L.</p> <p>Verify that the residual disinfectant concentration is measured at least at the same points in the distribution system and at the same time as total coliforms are sampled.</p>	System size by population	Samples/day	≤ 500	1	501 to 1000	2	1001 to 2500	3	2501 to 3300	4.)
System size by population	Samples/day										
≤ 500	1										
501 to 1000	2										
1001 to 2500	3										
2501 to 3300	4.)										

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-35.</b> Facilities with public water systems that use a surface water source or a groundwater source under direct influence of a surface water source that is not required to provide filtration are required to provide disinfection treatment by 30 December 1991 (40 CFR 141.72(a)).</p>	<p>Verify that the following requirements for disinfection are met:</p> <ul style="list-style-type: none"> <li>- it ensures 99.9 percent (3-log) inactivation of <i>Giardia lamblia</i> cysts every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74</li> <li>- it ensures 99.99 percent (4-log) inactivation of virus every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 174</li> <li>- the CT values are calculated daily as specified in 40 CFR 141.74(b)(3).</li> <li>- throughout the disinfection system there is either: <ul style="list-style-type: none"> <li>- automatic startup and alarm for insuring continuous disinfection application while water is delivered through distribution system</li> <li>- automatic shut-off when there is less than 0.2 mg/L residual disinfectant</li> </ul> </li> <li>- the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h</li> <li>- the residual disinfectant concentration, measured as total chlorine, combine chlorine, or chlorine dioxide is not undetectable in more than 5 percent of samples each month for more than 2 consecutive months.</li> </ul> <p>(NOTE: Water in a distribution system with a heterotrophic bacteria concentration less than or equal to 500 mL, measured as Heterotrophic Plate Count (HPC) is deemed to have a detectable disinfectant residual.)</p>
<p><b>2-36.</b> Facilities with public water systems that use a surface water source or a groundwater source under direct influence of a surface water source that provide filtration or that are required by the state to install filtration must meet specific disinfection requirements by 29 June 1993 or within 18 mo of being required to install filtration (40 CFR 141.72(b) and 141.73).</p>	<p>Determine if the facility provides filtration for drinking water.</p> <p>Verify that by 29 June 1993 the following requirements for disinfection are provided:</p> <ul style="list-style-type: none"> <li>- it ensures 99.9 percent (3-log) inactivation of <i>Giardia lamblia</i> cysts</li> <li>- it ensures 99.99 percent (4-log) inactivation of viruses</li> <li>- the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h.</li> <li>- the residual disinfectant concentration throughout the distribution system is not undetectable in more than 5 percent of samples each month for any 2 mo the system serves water to the public</li> <li>- analytical methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection.</li> </ul> <p>(NOTE: Systems which filter are given an inactivation credit dependant on the type of filtration used.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-37.</b> Facilities with public water systems that use a surface water source and do not provide filtration are required to report specific information monthly to the state beginning 31 December 1990 (unless the state has determined that filtration is not required) until filtration is in place (40 CFR 141.75(a)).</p>	<p>Verify that the following listed information is reported to the state at the indicated times:</p> <ul style="list-style-type: none"> <li>- source water quality information within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal fiscal year</li> <li>- a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal Fiscal year</li> <li>- the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day</li> <li>- when turbidity exceeds 5 NTU, as soon as possible but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day.</li> </ul> <p>(NOTE: See the complete text of 141.75(a) for more details on how this information is to be reported.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-38.</b> Facilities with public water systems that use a groundwater source under the direct influence of surface water and does not provide filtration treatment must report specific information to the state monthly starting 31 December 1990, or 6 mo after the state determines that the groundwater source is under the direct influence of surface water (40 CFR 141.75(a)).</p>	<p>Verify that the following listed information is reported to the state at the indicated times:</p> <ul style="list-style-type: none"> <li>- source water quality information within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal fiscal year</li> <li>- a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal Fiscal year</li> <li>- the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day</li> <li>- when turbidity exceeds 5 NTU, as soon as possible but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day.</li> </ul> <p>(NOTE: See the complete text of 141.75(a) for more details on how this information is to be reported.)</p>
<p><b>2-39.</b> Facilities with public water systems that use a surface water source or a groundwater source under the direct influence of surface water that provide filtration must report specific information monthly to the state starting 29 June 1993 or when filtration is installed, whichever is later (40 CFR 141.75(b)).</p>	<p>Verify that by 29 June 1993, or whenever filtration is installed, the following information is provided to the state in the indicated time frame:</p> <ul style="list-style-type: none"> <li>- turbidity measurements within 10 days after the end of each month the system serves water to the public</li> <li>- disinfection information within 10 days after the end of each month the system serves water to the public</li> <li>- notice of an occurrence of a waterborne disease outbreak, as soon as possible but no later than by the end of the next business day</li> <li>- when the turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day</li> <li>- any time the residual falls below 0.2 mg/L in the water entering the distribution system, as soon as possible, but no later than by the end of business the next day.</li> </ul> <p>(NOTE: See the complete text of 141.75(b) for more details on how this information is to be reported.)</p>

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**REGULATORY  
REQUIREMENTS:**

2-40. USEPA has set certain standards for analytic procedures that must be used and followed to demonstrate compliance with disinfection and filtration requirements (40 CFR 141.74).

**REVIEWER CHECKS:**

Verify that analytic methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection.



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>NOTIFICATION AND REPORTING REQUIREMENTS</b></p> <p><b>2-41.</b> Public water systems are required to maintain on the premises, or at a convenient location specific records (40 CFR 141.33(a), 141.33(b), and 141.33(d)).</p> <p><b>2-42.</b> When Primary Drinking Water Standards are exceeded, public notifications must be made (40 CFR 141.32).</p>	<p>Verify that records of bacteriological analyses are kept for a minimum of 5 yr.</p> <p>Verify that records of chemical analyses are kept for a minimum of 10 yr</p> <p>Verify that records of actions taken to correct violations of primary drinking water regulations are kept for a minimum of 3 yr after the last action taken for a particular violation.</p> <p>Verify that records concerning a variance or exemption granted to the system are kept for a period ending not less than 5 yr following the expiration of the variance or exemption.</p> <p>Verify that if there was an excess the following public notification procedures were followed:</p> <ul style="list-style-type: none"> <li>- notices were placed in a daily newspaper of general circulation in the area served by the system as soon as possible, but no later than 14 days after the violation or failure</li> <li>- notices were placed in a weekly newspaper of general circulation if there is no daily newspaper</li> <li>- notices were issued by mail delivery, by direct mail or with the water bill, or by hand delivery within 45 days after the violation or failure.</li> </ul> <p>(NOTE: The state may waive mail or hand delivery if it is determined that the violation or failure is corrected within the 45 day period.)</p> <p>Verify that if it was an acute violation, the public radio and television stations were notified.</p> <p>Verify that if public notification was made, it was made according to USEPA guidelines.</p> <p>Verify that following the initial notice, additional notice is given at least once every 3 mo by mail delivery, or by hand delivery, for as long as the violation exists.</p> <p>(NOTE: Instead of the requirements outlined here, community water systems in an area that is not served by a daily or weekly newspaper of general circulation must give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice must be given within 72 h for acute violations and 14 days for other violations.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-43.</b> Community water systems that exceed the secondary MCL of 2.0 mg/L for fluoride but not the MCL of 4.0 mg/L are required to notify specific individuals (40 CFR 143.5).</p> <p><b>2-44.</b> Facilities that operate public water systems must send reports to the state on any failure to comply with applicable biological, turbidity, radioactivity and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31).</p>	<p>Verify that notice has been provided to the following:</p> <ul style="list-style-type: none"> <li>- all billing units annually</li> <li>- all new billing units at the time service begins</li> <li>- the state public health officer.</li> </ul> <p>(NOTE: A copy of the text of the notice is found in 40 CFR 243.5(b).)</p> <p>Verify that, in general, reports are sent within the first 10 days following the month in which the result is received or the first 10 days following the end of the required monitoring period whenever standards are not met.</p> <p>Verify that the facility reported failure to comply with any national primary drinking water regulations to the state within 48 h.</p>



COMPLIANCE CATEGORY: DRINKING WATER MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<b>LEAD AND COPPER IN DRINKING WATER SYSTEMS</b>	
<p><b>2-45.</b> The use of pipe, solder, or flux that contains lead is not allowed in specific situations (40 CFR 141.43(a)(1) and 141.43(d)).</p>	<p>Verify that lead pipe, solder, or flux is not used in the installation or repair of either of the following:</p> <ul style="list-style-type: none"> <li>- any public water system</li> <li>- any plumbing in a residential facility providing water for human consumption which is connected to a public water system.</li> </ul> <p>(NOTE: This does not apply to leaded joints necessary for the repair of cast iron pipes.)</p> <p>(NOTE: Lead-free is defined as not more than 0.2 percent content for solders and flux and not more than 8.0 percent lead in reference to pipes and pipe fittings.)</p>
<p><b>2-46.</b> Community waters systems and each nontransient, non-community water systems were required to issue a notice by 19 June 1988 to persons served by the system that might be affected by lead contamination (40 CFR 141.34 and 141.43(a)(2)).</p>	<p>Verify that the notice was issued by one of the following methods:</p> <ul style="list-style-type: none"> <li>- three newspaper notices</li> <li>- a notice included with the water bill</li> <li>- a hand delivered notice.</li> </ul> <p>(NOTE: For nontransient, noncommunity water systems notice may be given by continuous posting.)</p> <p>(NOTE: The notice is not required if the system can demonstrate to the state that the water system, including the nonresidential and residential portion connected to the water system, are lead free.)</p> <p>(NOTE: Notice must be provided even if there is no violation of the national primary drinking water standards. The required wording of the notice is outlined in 40 CFR 141.34.)</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-47. Facilities with community or nontransient, noncommunity water systems must notify their users about lead in drinking water systems (40 CFR 141.85 and 141.91(f)).</b></p>	<p>Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples:</p> <ul style="list-style-type: none"> <li>- the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population</li> <li>- within 60 days after exceeding the lead action level: <ul style="list-style-type: none"> <li>- notices are insert in each customer's water utility bill</li> <li>- information is provided to the editorial departments of the major daily and weekly newspapers circulated in the community</li> <li>- pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers</li> <li>- public service announcements are submitted to at least five of the radio and television stations broadcasting to the community.</li> </ul> </li> </ul> <p>Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level.</p> <p>Verify that a nontransient, noncommunity water system delivers the public education materials by posting informational posters and distributing brochures.</p> <p>Verify that a nontransient, noncommunity water system repeats distribution of information at least once each calendar year in which the system exceeds the lead action level.</p> <p>(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)</p> <p>Verify that by 31 December any water system that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-48.</b> Community water systems and nontransient, noncommunity water systems are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1), 141.80(c), 141.80(e), 141.86(b), and 141.90(e)).</p>	<p>Verify that the concentration of lead does not exceed 0.015 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p> <p>Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p>
<p><b>2-49.</b> All water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d)).</p>	<p>Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards.</p> <p>(NOTE: Please see 40 CFR 181 and 40 CFR 183 for design details for corrosion control systems in relationship to the size of the water system.)</p>
<p><b>2-50.</b> Systems that exceed the lead or copper action level are required to implement applicable source water treatment standards (40 CFR 141.80(e) and 141.83).</p>	<p>Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action rate.</p> <p>Verify that if the state requires the installation of source water treatment, the installation is done within 24 mo after the states initial response.</p> <p>Verify that followup tap water monitoring and source water monitoring is completed within 36 mo after the states initial response.</p>
<p><b>2-51.</b> Facilities with water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).</p>	<p>Verify that lead service line replacement is done according to the schedules and parameters outlined in 40 CFR 141.84.</p> <p>(NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than 0.015 mg/L.)</p> <p>(NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods and the system submits the results to the state.)</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-52.</b> Monitoring for lead and copper is required to start on a specified date and be done at a specified number of sites according to the chart in Appendix 2-7 (40 CFR 141.80(g), 141.86(a)(1), 141.86(c), and 141.86(d)).</p>	<p>Verify that sample sites have been selected and sampling started as of the dates indicated in Appendix 2-7.</p> <p>Verify that monitoring is done according to the schedules outlined in 40 CFR 141.86 and as required by the state.</p> <p>Verify that the procedures for sampling and granting of variances found in 40 CFR 141.86 are followed.</p> <p>Verify that for the initial tap sample, all large water systems monitor during two consecutive 6-mo periods and all small and medium-size water systems monitor during each 6-mo period until:</p> <ul style="list-style-type: none"> <li>- the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment</li> <li>- the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods.</li> </ul> <p>(NOTE: A small or medium-sized water system that meets the lead and copper action levels during each of two consecutive 6 mo monitoring periods can reduce the frequency of sampling to once a year. If action levels are met during 3 consecutive years of monitoring, the frequency may be reduced to once every 3 yr.)</p> <p>Verify that for monitoring after the installation of corrosion control and source water treatment, large systems with optimal corrosion control by 1 January 1997 monitor during two consecutive 6-mo periods by 1 January 1998.</p> <p>Verify that for monitoring after the installation of corrosion control and source water treatment, small or medium-size systems that install optimal corrosion control within 24 mo after being required to do so by the state, monitor during two consecutive 6-mo periods within 36 mo after being required to install optimal corrosion control treatment.</p> <p>Verify that for monitoring after the installation of corrosion control and source water treatment required by the state, all systems that install state required systems monitor during two consecutive months within 36 mo after the initial state requirement.</p> <p>Verify that after the state has specified water quality parameter values for optimal corrosion control that monitoring is done during each subsequent 6 mo monitoring period beginning when the state specified the optimal values.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>2-53.</b> All large water systems and all small and medium size systems that exceed the lead or copper action level are required to monitor for water quality parameters in addition to lead and copper (40 CFR 141.40(h) and 141.87).</p> <p><b>2-54.</b> Water systems that fail to meet the lead or copper action levels are required to meet specific monitoring requirements (40 CFR 141.80(h) and 141.88).</p>	<p>Verify that monitoring for water quality parameters is done according to Appendix 2-8.</p> <p>Verify that systems that exceed lead or copper action levels at the tap collect one source water sample from each entry point to the distribution system within 6 mo after the exceedence.</p> <p>Verify that systems which install source water treatment as required by the state collects an additional source water sample from each entry point to the distribution system during two consecutive 6 mo monitoring periods.</p> <p>Verify that the system monitors as follows when the state specifies maximum permissible source water levels:</p> <ul style="list-style-type: none"> <li>- once during the 3 yr compliance period for water systems using only groundwater</li> <li>- annually for water systems using surface water or a combination of surface and groundwater.</li> </ul> <p>(NOTE: Frequency of monitoring may be reduced by the state upon request.)</p>
<p><b>2-55.</b> In reference to lead and copper in water systems, all water systems are required to fulfill specific reporting requirements (40 CFR 141.90(a) and 141.90(b)).</p>	<p>Verify that waste systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period.</p> <p>Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period.</p>

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

2-56. All systems subject to the lead and copper requirements are required to retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).

**REVIEWER CHECKS:**

Verify that records are kept onsite for 12 yr.

**COMPLIANCE CATEGORY:  
DRINKING WATER MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**SOLE SOURCE  
AQUIFER**

**2-57.** Projects that may affect the recharge zone or stream flow source zone of a designated sole source aquifer are regulated (40 CFR 149.103 and 149.104).

(NOTE: Currently the only Federally designated sole source aquifer is the Edwards Aquifer in the San Antonio Texas Area.)

Determine if the facility is located near a designated sole source aquifer.

Verify that the facility maintains a list of projects for which environmental impact statements will be prepared.

Verify that if any projects may potentially cause direct or indirect contamination through its recharge zone a petition has been submitted to the USEPA Regional Administrator.





## Appendix 2-1

### Primary Drinking Water Standards for Organic Contaminants

**Table 1: MCLs Applicable to Community Water Systems (40 CFR 141.12)**

Contaminant	mg/L
TTHMs (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform))	0.10

(NOTE: The standard for TTHM only applies to community water systems serving greater than 10,000 individuals which add a disinfectant during treatment.)

**Table 2: MCLs Applicable to Community and Nontransient, Noncommunity Water Systems (40 CFR 141.61(a))**

Contaminant	mg/L
1,1-dichloroethylene	0.007
1,1,1-trichloroethane	0.20
1,2-dichloroethane	0.005
1,2-dichloropropane	0.005
benzene	0.005
carbon tetra chloride	0.005
cis-1,2-dichloroethylene	0.07
ethylbenzene	0.7
monochlorobenzene	0.1
0-dichlorobenzene	0.6
para-dichlorobenzene	0.075
styrene	0.1
tetrachloroethylene	0.005
tololuene	1.0
trans-1,2-dichloroethylene	0.1
trichloroethylene	0.005
vinyl chloride	0.002
xylene (total)	10.0
dichloromethane	0.005*
1,2,4-trichlorobenzene	.07*
1,1,2-trichloroethane	.005*

\* The effective date for these MCLs is 17 January 1994.

(continued)

## Appendix 2-1 (continued)

**Table 3: MCLs For Synthetic Organic Contaminants Applicable to Community Water Systems and Nontransient, Noncommunity Water Systems (40 CFR 141.61(c))**

Contaminant	mg/L
alachlor	0.002
aldicarb	0.003**
aldicarb sulfoxide	0.004**
aldicarb sulfone	0.003**
atrazine	0.003
carbofuran	0.04
chlordane	0.002
dibromochloropropane	0.0002
2,4-D	0.07
ethylene dibromide	0.00005
heptachlor	0.0004
heptachlor epoxide	0.0002
lindane	0.0002
methoxychlor	0.04
pentachlorophenol	0.001
polychlorinated biphenyls	0.0005
toxaphene	0.003
2,4,5-TP	0.05
benzo(a)pyrene	0.0002*
delapon	0.2*
di(2-ethyhexyl) adipate	0.4*
di(2-ethyhexyl) phthalate	0.006*
dinoseb	0.007*
diquat	0.02*
endothall	0.1*
endrin	0.002*
glyphosate	0.7*
hexachlorobenzene	0.001*
hexachlorocyclopentadiene	0.05*
oxamyl (Vydate)	0.2*
picloram	0.5*
simazin	0.004*
2,3,7,8,-TCDD (dioxin)	3. x 10*

\*The effective date for these MCLs is 17 January 1994.

\*\*The MCLs for these substances have been postponed by the USEPA.

## Appendix 2-2

### Primary Drinking Water Standards for Inorganic Contaminants

**Table 1: MCLs Applicable to Community Water Systems  
(40 CFR 141.11, 141.12(c), and 141.62(b)(1))**

Contaminant	mg/L
arsenic	0.05
fluoride	4.0
TTHMs	0.10*

\* This MCL only applies to community water systems which serve a population of 10,000 individuals or more and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process.

**Table 2: MCLs Applicable to Community Water Systems and Nontransient,  
Noncommunity Water Systems(40 CFR 141.62(b)(2) through  
141.62(b)(6) and 141.62(b)(10) through 141.62(b)(15))**

Contaminant	mg/L
asbestos	7 million fibers/L (longer than 10 )
barium	2.0
cadmium	0.005
chromium	0.1
mercury	0.002
selenium	0.05
antimony	0.006
beryllium	0.004
cyanide (as free cyanide)	0.2
nickel	0.1
thallium	0.002

(continued)

**Appendix 2-2 (continued)**

**Table 3: MCLs Applicable to Community, Nontransient, Noncommunity and Transient Noncommunity Water Systems (40 CFR 141.62(b)(7) through 141.62(b)(9))**

<b>Contaminant</b>	<b>mg/L</b>
nitrate (as N)	10.0
nitrite (as N)	1.0
total nitrate and nitrite (as N)	10.0

## Appendix 2-3

### Detection Limitations for Inorganic Contaminants (40 CFR 141.23(a))

Contaminant	MCL (mg/L)	Analytical Method	Detection Limit (mg/L)
antimony	0.005	Atomic Absorption Furnace	0.003
			0.00086
		ICP Mass spectrometry	0.0004
		Hydride Atomic Absorption	0.001
asbestos	7 million fibers/L	Transmission Electron Microscopy	0.01 million fibers/L
barium	2.0	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1
		Inductively Coupled Plasma	0.002(0.001*)
cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma	0.0011
chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007
			(0.001)*
cyanide	0.2	Distillation, Spectrophotometric <sup>4</sup>	0.02
		Distillation, Automated, Spectrophotometric <sup>4</sup>	0.05
		Distillation, Selective Electrode <sup>4</sup>	0.02
		Distillation, Amenable, Spectrophotometric <sup>5</sup>	
mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor Technique	0.0002
nickel	0.1	Atomic Absorption, Furnace	0.001
			0.00066
		Inductively Coupled Plasma <sup>3</sup>	0.005
		ICP Mass Spectrometry	0.0005
nitrate	10 as N	Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1.0
		Ion Chromatography	0.01
nitrite	1 as N	Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05
		Manual Cadmium Reduction	0.01
		Ion Chromatography	0.004
selenium	0.05	Atomic Absorption; furnace	0.002
		Atomic Absorption; gaseous hydride	0.002
thallium	0.002	Atomic Absorption Furnace	0.001
			0.00076
		ICP-Mass Spectrometry	0.0003

<sup>1</sup> Using concentration techniques in Appendix A to USEPA Method 200.7

<sup>3</sup> Using a 2x preconcentration step as noted in Method 200.7. Lower minimum detection limits (MDLs) may be achieved by using a 4x preconcentration.

<sup>4</sup> Screening method for total cyanides

<sup>5</sup> Measures "free" cyanides

<sup>6</sup> Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.



## Appendix 2-4

### Detection Limitations 40 CFR 141.24(h)(18)

Contaminant	Detection Limit
alachlor	0.0002
aldicarb	0.0005
aldicarb sulfoxide	0.0005
aldicarb sulfone	0.0008
atrazine	0.0001
benzo[a]pyrene	0.00002
carbofuran	0.0009
chlordane	0.0002
dalapon	0.001
dibromochloropropane (DBCP)	0.00002
di (2-ethylhexyl) adipate	0.0006
di (2-ethylhexyl) phthalate	0.0006
dinoseb	0.0002
diquat	0.0004
2,4-D	0.0001
endothall	0.009
endrin	0.00001
ethylene dibromide (EDB)	0.00001
heptachlor	0.00004
heptachlor epoxide	0.00002
hexachlorobenzene	0.0001
hexachlorocyclopentadiene	0.0001
lindane	0.00002
methoxychlor	0.0001
oxamyl	0.002
picloram	0.0001
pentachlorophenol	0.00004
polychlorinated biphenyls	0.0001
simazine	0.00007
toxaphene	0.001
1,3,7,8-TCDD (dioxin)	0.000000005
2,4,5-TP	0.0002





## **Appendix 2-5**

### **Unregulated Organic and Inorganic Contaminants (40 CFR 141.40(n)(11) and 141.40(n)(12))**

#### **Organic Contaminants**

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aldrin

butachlor

carbaryl

dicamba

dieldrin

3-hydroxycarbofuran

methomyl

metolachlor

metribuzin

propachlor

#### **Inorganic Contaminants**

---

sulfate



## Appendix 2-6

### Coliform Bacteria Sampling Frequency (40 CFR 141.21(a)(2))

Population Served Per Month	Minimum Number of Samples Per Month
25 to 1000	1
1001 to 2500	2
2501 to 3300	3
3301 to 4100	4
4101 to 4900	5
4901 to 5800	6
5801 to 6700	7
6701 to 7600	8
7601 to 8500	9
8501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480



## Appendix 2-7

### Monitoring and Sampling Parameters for Lead and Copper in Drinking Water (40 CFR 141.86(c) and 141.86(d))

#### Number of Sampling Sites Required

System Size (people served)	No. of sites (standard monitoring)	No. of sites (reduced monitoring)
> 100,000	100	50
10,001 - 100,000	60	30
3301 - 10,000	40	20
501 - 3300	20	10
101 - 500	10	5
≤ 100	5	5

#### Dates for the Start of Monitoring

System Size (people served)	First 6 mo monitoring period begins on:
> 50,000	1 January 1992
3301 - 50,000	1 July 1992
≤ 3300	1 July 1993



## Appendix 2-8

### Monitoring Requirements for Water Quality Parameters (40 CFR 141.87)

(NOTE: This appendix is for illustrative purposes, consult the text of the regulation for actual details.)

Monitoring Period	Parameters <sup>1</sup>	Location	Frequency
Initial Monitoring	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium, conductivity, temperature	Taps and at entry points in distribution system	Every 6 mo
After Installation of Corrosion Control	pH, alkalinity, orthophosphate or silica, calcium <sup>3</sup> , conductivity, temperature	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup>	Entry points to distribution system	Biweekly
After State Specifies Parameter Values For Optimal Corrosion Control	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup>	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup>	Entry points to distribution system	Biweekly
Reduced Monitoring	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup> ,	Taps	Every 6 mo at a reduced number of sites
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual <sup>4</sup>	Entry points to distribution system	Biweekly

1. Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.
2. Orthophosphates must be measured only when an inhibitor containing a phosphate component is used. Silica must be measured only when an inhibitor containing silicate compounds is used.
3. Calcium must be measured only when calcium carbonate stabilization is used as a part of corrosion control.
4. Inhibitor dosage rates and inhibitor residual concentrations (orthophosphates or silica) must be measured only when an inhibitor is used.





<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>DRINKING WATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> <b>NA    C    RMA</b>	<b>REVIEWER COMMENTS:</b>		

## **SECTION 3**

### **Hazardous Materials Management**

<b>A. Applicability</b>	<b>1</b>
<b>B. Federal Legislation</b>	<b>1</b>
<b>C. State/Local Regulations</b>	<b>2</b>
<b>D. Key Compliance Requirements</b>	<b>2</b>
<b>E. Key Compliance Definitions</b>	<b>5</b>
<b>GUIDANCE FOR CHECKLIST USERS</b>	<b>9</b>

## **SECTION 3**

### **HAZARDOUS MATERIALS MANAGEMENT**

#### **A. Applicability**

This section primarily addresses the proper storage and handling of chemicals and the spill contingency and response requirements related to hazardous materials. Oil, pesticides, and asbestos are hazardous materials which require special management practices at FWS facilities, and are addressed in separate sections. Radioactive substances and the general category of hazardous wastes are also not included in this section. This section does not focus on individual hazardous chemicals or substances used, but deals with the generic requirements and good management practices (GMPs) associated with minimizing impacts on the environment due to spills or releases of hazardous materials because of improper storage and handling.

All underground storage tank (UST) regulations that apply to hazardous materials have been consolidated into Section 9, *Underground Storage Tank (UST) Management*.

#### **B. Federal Legislation**

- *The Occupational Safety and Health Act (OSHA) of 1970.* This Act, last amended in November 1990, 29 U.S. Code (USC) 651-678, is a Federal statute which governs the issues related to occupational safety and health. The purpose and policy of this Act are to assure every working man and woman in the nation safe and healthful working condition and to preserve our human resources by, among other things, providing for the development and publication of occupational safety and health standards, providing for an effective enforcement program, and providing for appropriate reporting procedures with respect to occupational safety and health which procedures will help achieve the objectives of this Act and accurately describe the nature of the occupational safety and health (29 USC 651(b)(9)(10)(12)).
- *The Hazardous Materials Transportation Act of 1975.* This Act, as last amended in November 1990, 49 USC 1801-1819, et. al., is the Federal legislation which governs the transportation of hazardous materials in the nation. The policy of Congress is to improve the regulatory and enforcement authority of the Secretary of Transportation to protect the Nation adequately against the risks to life and property which are inherent in the transportation of hazardous materials in commerce (49 USC 1801).
- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.* This Act was amended by the *Superfund Amendments and Reauthorization Act (SARA) of 1986*, 42 USC 9601-11050, 10 USC 2701-2810 et. al. CERCLA/SARA regulates the prevention, control, and compensation relating to environmental pollution.
- *The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA).* This Act was designed to promote emergency planning and preparedness at both the state and local level. It provides citizens and local governments with information regarding the

potential hazards in their community. EPCRA requires the use of emergency planning and designates state and local governments as recipients for information regarding chemicals and toxins used in the community.

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities. Agency funds meet applicable Federal, state, and local environmental requirements and for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- EO 12856, *Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements*. This EO requires the heads of Federal agencies to develop a written pollution prevention strategy for their agencies. Military departments are covered under the auspices of the Department of Defense (DOD). The head of each agency shall ensure that each of its covered facilities develops a written pollution prevention plan no later than the end of 1995. Federal agencies are required to conduct assessments of their facilities as necessary to ensure development of these plans and of the facilities pollution prevention program. Each Federal agency will also develop voluntary goals to reduce the agency's total releases of toxic chemicals to the environment, and offsite transfers of such chemicals for treatment and disposal are publicly reported.
- The National Fire Code, *Flammable and Combustible Liquids Code*, National Fire Protection Association (NFPA) 30, prohibits the storage of Class I and Class II liquids in plastic containers in general-purpose warehousing.

### **C. State/Local Regulations**

Hazardous materials may be regulated on the state level as well as local agencies (county/city fire departments) who may require flammable/combustible materials to meet certain storage requirements. Usually, these local ordinances will follow the NFPA *Fire Protection Guide on Hazardous Materials* (Pamphlets 325A, 325M, 491, 491F, and 704M).

### **D. Key Compliance Requirements**

- Planning and Documentation - Facilities should maintain a master listing of hazardous materials storage sites. When the facility needs outside fire protection help, it should tell the local fire department the types of hazardous chemicals it uses, the areas where it uses them, what it uses them for, and the amount it uses. Facilities are required to have Material Safety Data Sheet (MSDS) files for each hazardous chemical it stores and uses, not including such items as hazardous waste, tobacco, or drugs and cosmetics meant for personal use (29 CFR 1910.1200(b) and 1910.1200(g)).

- **Personnel Training** - Facilities are required to provide all employees with written information about hazardous chemicals to which they are exposed. Personnel who work with hazardous materials are required to be trained in the use of and potential hazards of such materials. All employees and supervisors working on sites exposed to hazardous materials or other hazards are required to be trained before engaging in these activities (29 CFR 1910.1200).
- **Hazardous Substance Release Reporting** - FWS facilities are required to notify the National Response Center (NRC) immediately if it releases hazardous substances in excess of or equal to reportable quantities (see Appendix 3-1). Facilities with continuous and stable releases have limited notification requirements. If a facility produces, uses, or stores extremely hazardous chemicals, and has a reportable release of these substances, it is required to notify the community emergency coordinator or local planning committee or Governor if there is no planning committee (40 CFR 302.1 through 302.6, 302.8, 355.40).
- **Emergency Planning** - A facility with extremely hazardous substances in amounts equal to or greater than the limits found in Appendix 3-1 are required to notify the emergency response commission and designate a representative to participate in local emergency planning (40 CFR 355.10 through 355.30 and 355 Appendix A).
- **Right-to-Know Requirements** - Facilities required by OSHA to have a MSDS for a hazardous chemical are required to submit the MSDSs to the emergency commission and fire department with jurisdiction over the facility. MSDSs will be updated within 3 mo after discovery of significant new information (40 CFR 370.20 through 370.28).
- **Hazardous Materials Storage** - Containers for hazardous chemicals are required to be labeled or tagged with the identity of the substance and appropriate warning markings. Areas where hazardous materials are stored or used around the facility are required to be kept free from accumulations of materials that create a hazard, such as leaking containers, or a placement of containers in a manner that would create hazards such as tripping, fire, or pests. Substances that together may create a fire hazard must be separated (29 CFR 1910.176(c), 1910.1200(b) and 1200(f)).
- **Hazardous Materials in Laboratories** - Facilities that use hazardous chemicals in laboratories are required to have a Chemical Hygiene Plan which is reviewed annually. Such facilities are also required to provide employees with information and training about the hazardous chemicals in their work areas. Records about the exposure of employees are to be kept along with medical records (29 CFR 1910.1450(e), 1910.1450(f), 1910.1450(h), and 1910.1450(j)).
- **Storage of Flammable/Combustibles** - In general, containers of flammable combustible liquids are to be stored and handled so as to not damage the container or label, block exits, or create a fire hazard (29 CFR 1910.106(d)).
- **Flammable Combustible Storage Cabinets** - Storage cabinets are to be fire resistant and labeled **FLAMMABLE - KEEP FIRE AWAY**. No more than 60 gal [227.12 L] of Class I or Class II liquids and no more than 120 gal [454.23 L] of Class III liquids can be stored in a cabinet (29 CFR 1910.106(d)(3)).

- **Flammable Combustible Storage Rooms** - Storage rooms inside a building are to be fire resistant and have a raised sill or ramp to prevent the flow of spilled material from exiting the room. Ventilation and clear aisles must be provided and dispensing must be done by an approved pump or self-closing faucet (29 CFR 1910.106(d)(4)).
- **Flammable/Combustible Warehouses or Storage Buildings** - These structures will have 3 ft [0.91 m] wide aisles for access to doors, windows, or standpipe connections. Materials will be stacked using pallets or dunnage when needed for stabilization and fire protection must be provided (29 CFR 1910.106(d)(5)(iv)).
- **Outside Storage of Flammable Combustible Liquids** - Containers of flammable/combustible liquids can be stored outside if no more than 1100 gal [4163.95 L] of liquid are stored adjacent to a building. More than 1100 gal [4163.95 L] can be stored if there are 10 ft [3.05 m] or more between buildings and the nearest flammable container. The storage area must be graded to divert spill or surrounded by a curb (29 CFR 1910.106(d)(6)).
- **Storage of Flammable/Combustibles in Industrial Areas** - Specific guidelines, requirements, or operating standards apply wherever flammable/combustible materials are stored, dispensed, or used in industrial plants, are in incidental storage, or in use in unit operations. This include availability of portable fire extinguishers, precautions being taken to prevent ignition, and use of maintenance and operating practices to control leakage and prevent accidental escape of flammable/combustible liquids (29 CFR 1910.106(e)(2) through 1910.106(e)(9)).
- **Flammable Combustible Liquid Storage Tanks** - Storage tanks that hold flammable/combustible liquids must not be below ground or inside buildings. They are to be built of steel except in certain circumstances. Outside aboveground tanks for flammable liquids are to meet requirements for distance between tanks, firefighting access, and containment. When flammable vapor may be present from storage tanks, heat sources will be kept from the tanks. Tanks are required to have been strength-tested before being used (29 CFR 1910.106(b)).
- **Compressed Gases** - Regardless of where the cylinders are stored, NO SMOKING signs should be posted and actions taken to prevent fire. Compressed gases are required to be stored according to the Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).
- **Acid Storage** - Bulk storage of acids should be done in buildings that are one story in height with ventilation. Safety equipment must be available along with fire protection. The building is to be labeled NO SMOKING and heated to prevent freezing (GMP).
- **Hazardous Materials Transportation** - The regulations in Title 49, Subchapter C of the CFR detail requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply when materials are being transported in commerce. According to a representative from the Department of Transportation (DOT), commerce is defined in terms of making a profit in this instance, therefore Subchapter C does not apply to Federal agencies.

- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

## **E. Key Compliance Definitions**

- **Aerosol** - a material which is dispensed from its container as a mist, spray, or foam by a propellant under pressure (29 CFR 1910.106(a)(1)).
- **Approved** - listed or approved by Underwriters Laboratories, Inc., Factory Mutual Engineering Corporation, The Bureau of Mines, National Institute of Occupational Safety and Health (NIOSH), The American National Standards Institute (ANSI), NFPA, or other nationally recognized agencies which list, approve, test or develop specifications for equipment to meet fire protection, health, or safety requirements (29 CFR 1910.106(a)(35)).
- **Atmospheric Tank** - a storage tank which has been designed to operate at pressures from atmospheric through 0.5 psig (29 CFR 1910.106(a)(2)).
- **Barrel** - a volume of 42 U.S. gallons (29 CFR 1910.106(a)(33)).
- **Basement** - a story of a building or structure having one-half or more of its height below ground level and to which access for fire fighting purposes is unduly restricted (29 CFR 1910.106(a)(4)).
- **Boiling Point** - the temperature at which a liquid starts to boil when at atmospheric pressure (14.7 psia [760 mm]), as determined by ASTM test D-86-72) (29 CFR 1910.106(a)(5)).
- **Bulk Plant** - that portion of the property where flammable or combustible liquids are received by tank vessel, pipelines, tank car, or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel pipeline, car, tank vehicle, or container (29 CFR 1910.106(a)(7)).
- **Closed Container** - a container so sealed with a lid or other closing device that neither liquid and/or vapor will escape from it at ordinary temperatures (29 CFR 1910.106(a)(9)).
- **Combustible Liquid** - a liquid having a flashpoint at or above 100 °F (37.8 °C). Combustible liquids are categorized as Class II or Class III liquids and are further subdivided as follows (29 CFR 1910.106(a)(18)):
  1. Class II liquids are those having a flashpoint at or above 100 °F (37.8 °C), and below 140 °F (60 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the volume of which makes up 99 percent or more of the total volume of the mixture.
  2. Class III A liquids are those having flashpoints at or above 140 °F (60 °C), and below 200 °F (93.3 °C) except any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.
  3. Class III B liquids are those having flashpoints at or above 200 °F (93.3 °C).

- **Extremely Hazardous Substances** - all substances listed in Appendices A and B in 40 CFR 355 (see the column labeled in Appendix 3-1) (40 CFR 355.20).
- **Fire Area** - that portion of a building separated from the remainder by construction having a rated fire resistance of at least 1 h and having all communicating openings properly protected by an assembly having a fire resistance rating of at least 2 h (29 CFR 1910.106(a)(12)).
- **Flammable Aerosol** - an aerosol that is required to be labeled FLAMMABLE under the *Federal Hazardous Substance Labeling Act* (15 USC 1261). These aerosols are considered Class 1A liquids (29 CFR 1910.106(a)(19)).
- **Flammable Liquid** - a liquid with a flashpoint below 100 °F (37.8 °C) except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids are categorized as Class 1 liquids, and are further subdivided as follows (29 CFR 1910.106(a)(19)):
  1. Class 1A are those that have a flashpoint below 73 °F (22.8 °C) and boiling point below 100 °F (37.8 °C)
  2. Class 1B are those that have flashpoints below 73 °F (22.8 °C) and boiling points at or above 100 °F (37.8 °C)
  3. Class 1C are those that have flashpoints at or above 73 °F (22.8 °C) and below 100 °F (37.8 °C).
- **Flashpoint** - the minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Flashpoints are established using several standard closed cup test methods (29 CFR 1910.106(a)(14)).
- **Good Management Practice (GMP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Hazardous Chemical** - in relationship to laboratories, a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees (29 CFR 1910.1450(b)).
- **Hazardous Substance** - any substance designated pursuant to 40 CFR 302 (see the column titled Hazardous Substance RQ in Appendix 3-1) (40 CFR 302.3).
- **Institutional Occupancy** - the occupancy or use of a building or structure or any portion thereof by persons harbored or detained to receive medical, charitable or other care or treatment or by persons involuntarily detained (29 CFR 1910.106(a)(16)).
- **Laboratory** - a facility where the laboratory use of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis (29 CFR 1910.1450(b)).
- **Laboratory Scale** - work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person (29 CFR 1910.1450(b)).



- **Laboratory Use of a Hazardous Chemical** - handling or use of such chemicals in which all of the following conditions are met (29 CFR 1910.106(a)(17)):
  1. chemical manipulations are carried out on a laboratory scale
  2. multiple chemical procedures or chemicals are used
  3. the procedures involved are not part of a production process, nor in any way simulate a production process
  4. protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.
- **Liquid** - any material with a fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM Test D-5-73. When not otherwise identified, the term *liquid* will include both flammable and combustible liquid (29 CFR 1910.106(a)(17)).
- **Low Pressure Tank** - a storage tank which has been designed to operate at pressures above 0.5 psig but not more than 15 psig (29 CFR 1910.106(a)(21)).
- **Material Safety Data Sheet (MSDS)** - written or printed material which contains information on hazardous chemicals such as common name, physical hazards, health hazards (29 CFR 1200(c)).
- **Office Occupancy** - the occupancy or use of a building or structure or any portion thereof for the transaction of business, or the rendering or receiving of professional services (29 CFR 1910.106(a)(24)).
- **Portable Tank** - a closed container having a liquid capacity over 60 gal [227.12 L] and not intended for fixed installation (29 CFR 1910.106(a)(25)).
- **Pressure Vessel** - a storage tank or container designed to operate at pressures above 15 psig (29 CFR 1910.106(a)(29)).
- **Protection for Exposure** - adequate fire protection for structures on property adjacent to tanks, where there are employees of the establishment (29 CFR 1910.106(a)(27)).
- **Safety Can** - an approved flammable liquid container having a spring-closing lid, spout cover, and other features designed to safely relieve internal pressure and to provide safe storage for the liquid (29 CFR 1910.106(a)(29)).
- **Select Carcinogens** - any substance which meets one of the following criteria (29 CFR 1910.106(1450(b))):
  1. it is regulated by OSHA as a carcinogen
  2. it is listed under the category "known to be carcinogens" and the Annual Report on Carcinogens published by the National Toxicology Program (NTP)
  3. it is listed under Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC)
  4. it is listed in either Group 2A or 2B by IARC or under the category "reasonably anticipated to be carcinogens" by NTP, and causes statistically significant tumor incidences in experimental animals under specific situations.

- **Toxic Chemical** - a chemical or chemical category listed in 40 CFR 372.65 (see the column titles Toxic Chemicals in Appendix 3-1) (40 CFR 372.3).
- ***Vapor Pressure*** - the pressure, measured in psia exerted by a volatile liquid (29 CFR 1910.106(a)(30)).

**HAZARDOUS MATERIALS MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

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## **HAZARDOUS MATERIALS MANAGEMENT**

### **Records to Review:**

- Hazardous Substance Spill Control and Contingency Plan
- Spill records
- Emergency plan documents
- MSDSs
- Inventory records
- Hazardous substance release reports
- Shipping papers
- Training records
- Placarding of hazardous materials

### **Physical Features to Inspect:**

- Hazardous material storage areas
- Shop activities
- Shipping and receiving area



**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL FACILITIES</b></p> <p><b>3-1.</b> Actions or changes since previous review of hazardous materials management should be examined (GMP).</p> <p><b>3-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on hazardous materials should be available at the facility (GMP).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>Verify that copies of the following regulations are available and kept current:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards.</i></li> <li>- EO 12856, <i>Federal Compliance with Right-To-Know Laws and Pollution Prevention Requirements.</i></li> <li>- 29 CFR 1910, <i>Occupational Safety and Health Standards.</i></li> <li>- 40 CFR 300, <i>National Oil and Hazardous Substances Pollution Contingency Plan.</i></li> <li>- 40 CFR 302, <i>Reportable Quantities of Hazardous Materials (Table 302.4).</i></li> <li>- 40 CFR 355, <i>Emergency Planning and Notification.</i></li> <li>- 40 CFR 370, <i>Hazardous Chemical Reporting: Community Right-To-Know.</i></li> <li>- 40 CFR 372, <i>Toxic Chemical Release Reporting and Community Right-To-Know.</i></li> <li>- 49 CFR 171, <i>General Information, Regulations, and Definitions.</i></li> <li>- 49 CFR 172, <i>Hazardous Materials Tables, Hazardous Materials Communications Requirements and Emergency Response Information Requirements.</i></li> <li>- 49 CFR 173, <i>Shippers, General Requirements for shipments and Packaging.</i></li> <li>- 49 CFR 178, <i>Specifications by Packaging.</i></li> <li>- 49 CFR 179, <i>Specifications for Tank Cars.</i></li> <li>- NFPA, <i>Fire Protection Guide of Hazardous Materials.</i></li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>3-3. FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).</p>	<p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- transportation of hazardous materials</li> <li>- notification requirements</li> <li>- response plan requirements</li> <li>- spill response requirements.)</li> </ul>
<p>3-4. Facilities are required to meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning hazardous materials have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p>3-5. FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).</p>	<p>Determine if the facility has received an NOV relating to hazardous materials.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>
<p>3-6. A master listing of all hazardous materials storage sites should be maintained at the facility (GMP).</p>	<p>Determine the locations of all hazardous materials storage areas on the facility by interviewing staff.</p> <p>(NOTE: Hazardous constituents of expired materials discovered during the inventory process, or at any other time, should be identified prior to disposal, see appropriate checklist item in Hazardous Waste Management.)</p>



**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-7. Facilities should be receiving specific information from tenant operations (GMP).</b></p>	<p>Verify that FWS facilities with tenant operations receive the following information from their tenants:</p> <ul style="list-style-type: none"> <li>- information on spills</li> <li>- pesticide application information</li> <li>- copies of permits</li> <li>- EPCRA reports</li> <li>- hazardous waste disposal amounts and destinations</li> <li>- notices of violations</li> <li>- location of hazardous material and hazardous waste storage areas.</li> </ul>
<p><b>3-8. Hazardous materials storage sites should be inspected by Safety Officer (GMP).</b></p>	<p>Determine if the safety officer inspects hazardous material storage sites and which sites are inspected.</p> <p>Verify that corrective actions have been made when needed as noted in the safety inspection records.</p>
<p><b>3-9. Facilities should coordinate with the local fire department concerning the types of hazardous chemicals used at the facility, the areas where they are used, what they are used for, and the quantities which are used in a given operation (GMP).</b></p>	<p>Determine if the facility has coordinated efforts with the local fire department.</p> <p>Determine if the department is aware of areas that are at high risk for chemical incidents.</p>
<p><b>3-10. Specific persons should be designated responsible for hazardous materials storage areas, and the precise nature of their responsibilities should be specified (GMP).</b></p>	<p>Verify that specific individuals have been designated responsible for hazardous materials storage areas.</p> <p>Verify that the individuals designated responsible for hazardous materials storage areas are aware of the precise nature of their responsibilities.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-11.</b> Facilities are required to have on file a MSDS for each hazardous chemical stored and used at the facility (29 CFR 1910.1200(b)(3)(ii), 1910.1200(b)(4)(ii), 1910.1200(b)(6), 1910.1200(g)(1) and 1910.1200(g)(8)).</p>	<p>Verify that an MSDS is on file and readily accessible to workers on all shifts in the workplace for each hazardous material stored or used.</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul> <p>(NOTE: This requirement applies to laboratories. It also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use.)</p>
<p><b>3-12.</b> Containers of hazardous chemicals in the workplace are required to be labeled, tagged, or marked with specific information (29 CFR 1910.1200 (b)(3)(i), 1910.1200 (b)(4)(i), 1910.1200 (b)(5), and 1910.1200 (f)(5) through 1910.1200(f)(7)).</p>	<p>Verify that all containers of hazardous chemicals in the workplace are labeled with the following information:</p> <ul style="list-style-type: none"> <li>- identity of the hazardous chemical</li> <li>- appropriate hazard warnings.</li> </ul> <p>(NOTE: The facility may use signs, placards, process sheets, batch tickets, operating procedures or other written materials instead of attaching labels to individual stationary process containers as long as the alternate method identifies the containers to which it is applicable.)</p> <p>(NOTE: Portable containers into which hazardous chemicals are transferred from labeled containers and which are intended only for the immediate use of the employee who performs the transfer are not required to be marked.)</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
3-12. (continued)	<p>(NOTE: This requirement also applies to laboratories. It also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions.)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul>
3-13. Specific house-keeping requirements must be met in areas where hazardous materials are stored (29 CFR 1910.176(c)).	<p>Verify that areas where hazardous materials are stored and/or used around the facility are free from accumulations of materials that create a hazard from tripping, fire, explosion, or pest harborage.</p> <p>(NOTE: The following are suggested housekeeping practices:</p> <ul style="list-style-type: none"> <li>- drums/containers are not leaking and are tightly sealed</li> <li>- drip pans and/or absorbent material are placed under containers</li> <li>- dispensing areas are located away from catch basins and storm drains.)</li> </ul>



**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PERSONNEL TRAINING</b></p> <p><b>3-14.</b> Facilities are required to have a written hazardous communication program that is designed to provide all employees with information about the hazardous chemicals to which they are exposed (29 CFR 1910.1200 (b)(6) and 1910.1200 (e)(1)).</p>	<p>Verify that there is a written hazard communication program that contains the following:</p> <ul style="list-style-type: none"> <li>- how general training will be done to inform employees of issues such as MSDSs and hazardous material labels and other warning signs</li> <li>- a list of the hazardous chemicals known to be present (can be done for the entire workplace or individual work areas)</li> <li>- the methods the facility will use to inform the employees of the hazards associated with nonroutine tasks and the hazards associated with chemicals contained in unlabeled pipes in their work areas: <ul style="list-style-type: none"> <li>- identity of the hazardous chemicals contained</li> <li>- appropriate hazard warning</li> </ul> </li> <li>- details of employee training.</li> </ul> <p>(NOTE: This requirement also applies to laboratories. It also applies to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions.)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-15. Personnel working with hazardous materials are required to be trained in their proper use and potential hazards (29 CFR 1910.1200(b)(3)(iii), 1910.1200(b)(4)(iii), 1910.1200(b)(6), and 1910.1200(h)).</b></p>	<p>Verify that employees are provided with information and trained on hazardous chemicals in their workplace at the time of initial assignment and whenever a new hazard is introduced into the workplace.</p> <p>Verify that employees are informed of the following:</p> <ul style="list-style-type: none"> <li>- any operations in their work areas where hazardous chemicals are present</li> <li>- the location and availability of the written hazard communication program, including the required lists of hazardous chemicals, and material safety data sheets.</li> </ul> <p>Verify that training includes:</p> <ul style="list-style-type: none"> <li>- methods and observations to use to detect a release</li> <li>- the physical and health hazards of the chemicals in the work areas</li> <li>- protective measures and procedures to use</li> <li>- the details of the hazard communication program developed by the facility, including an explanation of the labeling system, MSDSs, and how employees can obtain and use the appropriate hazard information.</li> </ul> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> <li>- hazardous waste</li> <li>- tobacco or tobacco products</li> <li>- wood or wood products</li> <li>- articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> <li>- is formed to a specific shape or design during manufacture</li> <li>- has end use functions dependent in whole or in part upon its shape or design during end use</li> </ul> </li> <li>- food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel</li> <li>- any drug as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration</li> <li>- cosmetics which are packaged for sale or intended for personal use</li> <li>- any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> where the facility can demonstrate that it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposure experienced by consumers</li> <li>- ionizing and nonionizing radiation</li> <li>- biological hazards.)</li> </ul>

**COMPLIANCE CATEGORY:**  
**HAZARDOUS MATERIALS MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**3-15. (continued)**

(NOTE: These requirements also apply to laboratories. They also apply, as necessary, for protection in event of a spill or leak, to work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use.)





**COMPLIANCE CATEGORY:**  
**HAZARDOUS MATERIALS MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**POLLUTION  
PREVENTION**

3-16. Facilities are required to prepare Pollution Prevention Plans by 31 December 1995 (EO 12856, Section 3-302(d)).

Verify that the facility is in the process of preparing a Pollution Prevention Plan that outlines what the facility is going to do to minimize pollution.



<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS MATERIALS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>HAZARDOUS MATERIALS IN LABORATORIES</b>  <b>3-17. Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to have a Chemical Hygiene Plan (29 CFR 1910.1450(e)).</b>	<p>(NOTE: The requirements for hazardous materials in laboratories do not apply to:</p> <ul style="list-style-type: none"> <li>- uses of hazardous chemicals that do not meet the definition of laboratory use</li> <li>- laboratory uses of hazardous chemicals which provide no potential for exposure such as:               <ul style="list-style-type: none"> <li>- commercially prepared kits such as pregnancy tests in which all the reagents needed to conduct the test are contained in the kit</li> <li>- procedures using chemically-impregnated test media such as Dip-and Read tests.)</li> </ul> </li> </ul> <p>Verify that a written Chemical Hygiene plan exists and is:</p> <ul style="list-style-type: none"> <li>- capable of protecting employees from health hazards associated with hazardous chemicals in the laboratory</li> <li>- capable of keeping exposure to regulated substances below required limits.</li> </ul> <p>Verify that the plan is readily available to employees and employee representatives.</p> <p>Verify that the plan includes the following elements and indicates specific measures to be taken when laboratory work involves the use of hazardous chemicals:</p> <ul style="list-style-type: none"> <li>- standard operating procedures relevant to safety and health considerations to be followed</li> <li>- criteria that will be used to determine and implement control measures to reduce employee exposure to hazardous chemicals including the engineering controls, the use of personal protective equipment and hygiene practices</li> <li>- a requirement that fume hoods and other protective equipment are functioning properly and specific measures taken to ensure proper and adequate performance of the equipment</li> <li>- provisions for employee information and training</li> <li>- circumstances and situations which require prior approval from a designated individual</li> <li>- provisions for medical consultations and medical exams</li> <li>- designation of individuals responsible for the implementation of the plan</li> <li>- assignment of a Chemical Hygiene Officer and, if appropriate, establishment of a Chemical Hygiene Committee</li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-17. (continued)</b></p>	<ul style="list-style-type: none"> <li>- provisions for additional employee protection when working with particularly hazardous substances, including, select carcinogens, reproductive toxins and substances which have a high degree of acute toxicity. Provisions might include:               <ul style="list-style-type: none"> <li>- establishment of a designated area</li> <li>- use of containment devices such as fume hoods or glove boxes</li> <li>- procedures for safe removal of contaminated waste</li> <li>- decontamination procedures.</li> </ul> </li> </ul> <p>Verify that the plan is reviewed annually and updated as needed.</p>
<p><b>3-18.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to provide employees with information and training concerning the hazards of the chemicals in their work areas (29 CFR 1910.1450(f)).</p>	<p>Verify that information about the hazards of the chemicals in the work area is provided at the time of initial employment and prior to assignment involving new exposure risks.</p> <p>(NOTE: The frequency of refresher training is to be determined by the facility.)</p> <p>Verify that employees are informed of:</p> <ul style="list-style-type: none"> <li>- the requirements to be trained and informed</li> <li>- the location and availability of the Chemical Hygiene Plan</li> <li>- the permissible exposure limits for OSHA regulated substances or recommended exposure levels for other hazardous chemicals where there is no OSHA limit</li> <li>- signs and symptoms associated with exposure</li> <li>- the location and known availability of known reference material such as MSDSs.</li> </ul> <p>Verify that training includes:</p> <ul style="list-style-type: none"> <li>- methods and observations that may be used to detect the presence of or release of a hazardous chemical</li> <li>- the physical and health hazards of chemicals in the work area</li> <li>- the measures employees can take to protect themselves</li> <li>- applicable details of the Chemical Hygiene Plan.</li> </ul>

**COMPLIANCE CATEGORY:**  
**HAZARDOUS MATERIALS MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-19.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to follow specific handling and operating procedures (29 CFR 1910.1450(h)).</p>	<p>Verify that labels on incoming containers of hazardous chemicals are not removed or defaced.</p> <p>Verify that material safety data sheets are maintained and readily accessible to lab employees.</p> <p>Verify that, if the facility is developing chemical substances, a determination is made as to whether or not it is a hazardous chemical if the composition of the chemical is known and the chemical is produced only for use by the laboratory.</p> <p>Verify that, if the facility is developing chemical substances as a byproduct and the composition is not known, it is assumed to be hazardous.</p> <p>Verify that, if the chemical substance is produced for another user outside of the lab, the lab meets the standards outlined in 29 CFR 1910.1200 (checklist items 3-11 and 3-12, 3-14 and 3-15).</p>
<p><b>3-20.</b> Facilities engaged in the laboratory use of hazardous chemicals (see definitions) are required to maintain specific records (29 CFR 1910.1450(j)).</p>	<p>Verify that records of monitoring for employee exposure are maintained along with any medical records or test results.</p>



**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RELEASES</b></p> <p><b>3-21.</b> Absorbent materials should be available for spill and/or release cleanup in areas where hazardous materials are used or stored (GMP).</p> <p><b>3-22.</b> Releases in excess or equal to reportable quantities of hazardous substances shall be reported to the NRC immediately (40 CFR 302.1 through 302.6).</p> <p><b>3-23.</b> Releases of a reportable quantity or greater should be reported to the Region and the SPCO (GMP).</p>	<p>Verify that absorbent materials are available for spill cleanup.</p> <p>Verify that spills in excess of the reportable quantities listed in Appendix 3-1 have been reported.</p> <p>Verify that a procedure is in place for the notification of the NRC immediately after becoming aware of the release.</p> <p>Verify that if mixtures or solutions of hazardous substances are released, except for radionuclides, it is reported when:</p> <ul style="list-style-type: none"> <li>- the quantity of all hazardous constituents of the mixture or solution is known and a reportable quantity or more of any hazardous constituent is released, or</li> <li>- the quantity of one or more of the hazardous constituents of the mixture or solution is unknown and the total amount of the mixture or solution released equals or exceeds the reportable quantity for the hazardous constituent with the lowest reportable quantity.</li> </ul> <p>(NOTE: Notification requirements for radionuclide releases are not included in this protocol.)</p> <p>Verify that releases of a reportable quantity or greater are reported to the Region and the SPCO.</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-24.</b> Facilities with releases that are continuous and stable in quantity and rate are required to meet limited notification requirements (40 CFR 302.8).</p>	<p>Determine if the facility has any releases that are continuous and stable in quantity and rate.</p> <p>Verify that the following notifications have been given:</p> <ul style="list-style-type: none"> <li>- initial telephone notification</li> <li>- initial written notification within 30 days of the initial telephone notification</li> <li>- followup notification within 30 days of the first anniversary date of the initial written notification</li> <li>- notification of changes in: <ul style="list-style-type: none"> <li>- the composition or source of the release</li> <li>- information submitted in the initial written notification</li> <li>- the followup notification required on the first anniversary date of the initial written notification when there is an increase in the quantity of the hazardous substances being released in any 24 h period that represents a statistically significant increase.</li> </ul> </li> </ul> <p>(NOTE: Instead of the initial written report or followup report, the facility may submit a copy of the Toxic Release Inventory form submitted under EPCRA for the previous 1 July provided that conditions are met as described in 40 CFR 302.8(j).)</p>
<p><b>3-25.</b> Facilities where any hazardous chemical is used or stored at which there is a release of a reportable quantity of any extremely hazardous substance in amounts equal to or greater than the threshold limits (see Appendix 3-1) are required to provide emergency release notification (EO 12856, 40 CFR 355.40 and 355 Appendix A).</p>	<p>Determine if the facility has any of the items listed in Appendix 3-1 as extremely hazardous substances in amounts equal to or greater than those listed in Appendix 3-1.</p> <p>Determine if there has been a spill of an extremely hazardous substance in an amount exceeding the reportable quantity.</p> <p>Verify that if a spill has occurred in excess of the reportable quantity, the facility immediately notified the:</p> <ul style="list-style-type: none"> <li>- community emergency coordinator for the local emergency planning committee of any area likely to be affected by the release</li> <li>- state emergency response commission of any state likely to be affected by the release</li> <li>- local emergency response personnel if there is no local emergency planning committee.</li> </ul>



**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>3-25. (continued)</b>	<p>Verify that the notice contains the following, to the extent known at the time of notice, and so long as no delay in notice or emergency response results:</p> <ul style="list-style-type: none"> <li>- the chemical name or identity of any substance involved in the release</li> <li>- an indication of whether the substance is an extremely hazardous substance</li> <li>- an estimate of the quantity of any such substance that was released into the environment</li> <li>- the time and duration of the release</li> <li>- the medium or media into which the release occurred</li> <li>- any known or anticipated acute or chronic health risks associated with the emergency, and, where appropriate, advice regarding medical attention necessary for exposed individuals</li> <li>- proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordination because of the local emergency plan)</li> <li>- the names and telephone numbers of the person or persons to be contacted for further information.</li> </ul> <p>Verify that after the immediate verbal notification, a followup written emergency notification is produced which contains the same information detailed in the verbal notice plus:</p> <ul style="list-style-type: none"> <li>- actions taken to respond to and contain the release</li> <li>- any known or anticipated acute or chronic health risks associated with the risk</li> <li>- advice regarding medical attention necessary for exposed individuals as necessary.</li> </ul> <p>(NOTE: These release notification requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- any release which results in exposure to persons solely within the boundary of the facility</li> <li>- any release which is a Federally permitted release as defined in CERCLA</li> <li>- any release that is continuous and stable in quantity and rate</li> <li>- any release of a pesticide product exempt from CERCLA reporting</li> <li>- any release not meeting the definition of a release</li> <li>- any radionuclide release which occurs: <ul style="list-style-type: none"> <li>- naturally in the soil from land holdings such as parks, golf courses, or other large tracts of land</li> <li>- naturally from the disturbance of the land for purposes other than mining, such as for agricultural or construction activities</li> <li>- from the dumping of coal and coal ash at utility and industrial facilities with coal-fired boilers</li> <li>- from coal and coal ash piles at utility and industrial facilities with coal-fired boilers.)</li> </ul> </li> </ul>



**COMPLIANCE CATEGORY:  
HAZARDOUS MATERIALS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>EMERGENCY PLANNING</b></p> <p>3-26. Facilities where there are extremely hazardous substances present in amounts equal to or greater than the threshold limits found in Appendix 3-1 are required to follow specific emergency planning procedures (EO 12856; 40 CFR 355.30, and 355 Appendix A).</p>	<p>Determine if the facility has any of the items listed in Appendix 3-1 as extremely hazardous substances in amounts equal to or greater than those listed in Appendix 3-1.</p> <p>Verify that the facility has notified the state emergency response commission, or Governor if there is not emergency response commission, that the facility is subject to emergency planning requirements within 60 days after the facility first becomes subject to these requirements.</p> <p>Determine whether the facility has representatives for contact by internal and external parties.</p> <p>Verify that the facility has notified the local emergency planning committee, or Governor if there is no committee, of the facility representative on or before 3 March 1994.</p> <p>Verify that the facility is actively participating in offsite planning by interviewing the facility point of contact and reviewing the files.</p> <p>Verify that a procedure is in place to notify the local emergency planning committee of changes at the facility that are relevant to emergency planning.</p>



<b>COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>RIGHT-TO-KNOW</b>	
<p><b>3-27.</b> Facilities which are required to prepare or have available an MSDS for a hazardous chemical under OSHA are required to meet specific MSDS reporting requirements for planning purposes (EO 12856; 40 CFR 370.20, 370.21, and 370.28).</p>	<p>Verify that MSDSs are submitted to the emergency commission and the fire department with jurisdictions over the facility for each hazardous chemical present at the facility according to the following thresholds by 3 August 1994:</p> <ul style="list-style-type: none"> <li>- for all hazardous chemicals present at the facility at any one time . amounts equal to or greater than 10,000 lb (4540 kg) (not all hazardous chemicals requiring an MSDS are listed in Appendix 3-1)</li> <li>- for all extremely hazardous substances present at the facility in amounts greater than or equal to 500 lb (227 kg) or the threshold planning quantity (see Appendix 3-1).</li> </ul> <p>(NOTE: Commonly overlooked substances requiring an MSDS are propane and petroleum-based fuels.)</p> <p>Verify that, if the facility has not submitted MSDSs, the following have been submitted:</p> <ul style="list-style-type: none"> <li>- a list of hazardous chemicals for which the MSDS is required, grouped by hazard category</li> <li>- the chemical or common name of each hazardous chemical</li> <li>- any hazardous component of each hazardous chemical except when reporting mixture.</li> </ul> <p>Verify that revised MSDSs are provided within 3 mo after the discovery of significant new information concerning the hazardous chemical.</p> <p>(NOTE: The facility may fulfill these reporting requirements for a hazardous chemical that is a mixture of hazardous chemicals by doing one of the following:</p> <ul style="list-style-type: none"> <li>- providing the required information on each component in the mixture which is a hazardous chemical</li> <li>- providing the required information on the mixture itself.)</li> </ul>
<p><b>3-28.</b> Facilities which are required to prepare or have available an MSDSs for a hazardous chemical under OSHA are required to meet specific inventory reporting requirements for planning purposes (EO 12856; 40 CFR 370.20, 370.25 and 370.28).</p>	<p>Verify that the Tier I (or Tier II) forms are submitted to the emergency commission and the fire department with jurisdictions over the facility for each hazardous chemical present at the facility according to the following thresholds by 1 March 1995 and annually thereafter:</p> <ul style="list-style-type: none"> <li>- for all hazardous chemicals present at the facility at any one time in amounts equal to or greater than 10,000 lb (4540 kg) (not all hazardous chemicals requiring an MSDS are listed in Appendix 3-1)</li> <li>- for all extremely hazardous substances present at the facility in amounts greater than or equal to 500 lb (227 kg) or the threshold planning quantity (see Appendix 3-1).</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS MATERIALS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>3-28. (continued)</b>	<p>(NOTE: Commonly overlooked substances requiring an MSDS are propane and petroleum-based fuels.)</p> <p>(NOTE: The facility may fulfill these reporting requirements for a hazardous chemical that is a mixture of hazardous chemicals by doing one of the following:</p> <ul style="list-style-type: none"> <li>- providing the required information on each component in the mixture which is a hazardous chemical</li> <li>- providing the required information on the mixture itself.)</li> </ul>
<p><b>3-29.</b> As of 1 July 1995, facilities that manufacture, process, or otherwise use a toxic chemical (see Appendix 3-1) in excess of applicable threshold quantities and that have 10 or more employees are subject to certain reporting and recordkeeping requirements (EO 12856; 40 CFR 372.22 through 372.30).</p>	<p>Determine if facilities meeting the listed criteria exceed the following threshold levels:</p> <ul style="list-style-type: none"> <li>- has manufactured or processed 25,000 lb/ yr [11,337.31 kg/yr] of toxic chemicals</li> <li>- has used 10,000 lb [4540 kg] of toxic chemicals in other ways during the year.</li> </ul> <p>(NOTE: Articles containing toxic chemicals are not included in calculations of total toxic chemical present at the facility. See 40 CFR 372.30(b)(3) for procedure to determine whether an excess has occurred.)</p> <p>Verify that facility annually submits a completed USEPA Form R to the USEPA and state on or before 1 July of the next year.</p> <p>Verify that facilities retain the following records for 3 yr:</p> <ul style="list-style-type: none"> <li>- a copy of each report submitted</li> <li>- all supporting materials and documentation used to make the compliance determination.</li> </ul>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>FLAMMABLE/COMBUSTIBLE LIQUIDS STORAGE</b></p> <p><b>General</b></p> <p><b>3-30.</b> Specific good management practices should be considered when storing and handling flammable/combustible materials (GMP).</p>	<p>(NOTE: The requirements pertaining to the handling, storage, and use of flammable/combustible liquids with a flashpoint below 200 °F [93.33 °C] outlined through 29 CFR 1910.106 (checklist items 3-30 through 3-46) do not apply to the following (29 CFR 1910.106(j)):</p> <ul style="list-style-type: none"> <li>- bulk transportation of flammable/combustible liquids</li> <li>- storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment</li> <li>- storage of flammable and combustible liquids on farms</li> <li>- liquids without a flashpoint that may be flammable under some conditions, such as halogenated hydrocarbons and mixtures containing halogenated hydrocarbons</li> <li>- mists, sprays, or foams, except in flammable aerosols</li> <li>- the following facilities when they meet NFPA Standards: <ul style="list-style-type: none"> <li>- dry cleaning plants</li> <li>- manufacture of organic coatings</li> <li>- solvent extraction plants</li> <li>- stationary combustion engines and gas turbines.)</li> </ul> </li> </ul> <p>Verify that the following good management practices are followed:</p> <ul style="list-style-type: none"> <li>- there are no positive sources of ignition (open flames, welding, radial heat, mechanical sparks) in the immediate area</li> <li>- items are not stored against pipes or coils producing heat</li> <li>- paint drums that are stored horizontally are rolled a half turn every 90 days</li> <li>- containers of paint are palletized prior to storage</li> <li>- aerosol containers are stored in well-ventilated areas.</li> </ul> <p>Verify that containers are stored and handled such that:</p> <ul style="list-style-type: none"> <li>- open flame devices are not in use in the storage area</li> <li>- combustible materials, other than wood pallets used in the storage of flammable/combustibles, are not stored in the storage facility</li> <li>- handling is done so as to avoid damaging the label</li> <li>- materials received without a date of manufacture label are marked with the shipping document date</li> <li>- leaking containers are removed from the storage area immediately</li> <li>- containers are stored so that they are issued or used in the order of dates of manufacture, with the material being the oldest used first</li> <li>- there are no open containers.</li> </ul>

**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-31.</b> Drums and other containers of less than 60 gal [227.12 L] individual capacity and portable tanks less than 660 gal [2498.37 L] individual capacity used to store flammable or combustible materials are required to meet specific standards (29 CFR 1910.106(d)(1) and 1910.106(d)(2)).</p>	<p>Verify that flammable and combustible liquid containers meet the constraints outlined in Appendix 3-2 except that glass or plastic containers of no more than 1 gal [3.79 L] capacity may be used for a Class IA or IB flammable liquid if:</p> <ul style="list-style-type: none"> <li>- the liquid would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container</li> <li>- the user's process either would require more than 1 pt [0.47 L] of a Class IA liquid or more than 1 qt [0.95 L] of a Class IB liquid of a single assay lot to be used at one time, or would require the maintenance of an analytical standard liquid of a quality which is not met by the specified standards of the liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Appendix 3-2 for the class of liquid.</li> </ul> <p>Verify that each portable tank has one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire exposure conditions to 10 psig or 30 percent of the bursting pressure of the tank, whichever is greater.</p> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)</li> </ul>
<p><b>3-32.</b> Flammable or combustible liquids shall not be stored in ways that limit the use of exits, stairways, or areas normally used for the safe egress of people (29 CFR 1910.106 (d)(5)(i)).</p>	<p>Verify that exits or common traffic routes are not blocked.</p> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engine</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)</li> </ul>



**COMPLIANCE CATEGORY:  
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-33.</b> Storage cabinets used for the storage of flammable/combustible liquids must meet specific requirements (29 CFR 1910.106(d)(3)).</p>	<p>Verify that storage cabinets meet the following:</p> <ul style="list-style-type: none"> <li>- no more than 60 gal [227.12 L] of Class I or Class II liquids nor any more than 120 gal [454.23 L] of Class III liquids are stored in the cabinet</li> <li>- the cabinets are fire-resistant</li> <li>- cabinets are constantly closed and are conspicuously labeled <b>FLAMMABLE--KEEP FIRE AWAY.</b></li> </ul>
<p><b>3-34.</b> Storage cabinets used for the storage of flammable/combustible liquids should meet specific requirements (GMP).</p>	<p>Verify that storage cabinets meet the following:</p> <ul style="list-style-type: none"> <li>- materials within the cabinet are segregated</li> <li>- there are no open containers within the cabinet</li> <li>- all containers in the cabinet are labeled.</li> </ul>
<p><b>3-35.</b> Inside flammable/combustible storage rooms must meet certain specifications (29 CFR 1910.106(d)(4)).</p>	<p>Verify that the facility's flammable/combustible storage facility meets the following:</p> <ul style="list-style-type: none"> <li>- the walls meet fire resistance test NFPA 251-1969</li> <li>- a 4 in. [10.16 cm] raised sill or ramp is provided to adjacent rooms or buildings, or the floor of the storage area is 4 in. [10.16 cm] lower than the surrounding floors</li> <li>- an open grated trench that drains to a safe area is in the building if a sill or ramp is not present</li> <li>- liquid tight wall/ floor joints exist</li> <li>- self-closing fire doors exist (NFPA 80)</li> <li>- the electrical wiring and equipment meet NFPA 70 requirements</li> <li>- the storage in the rooms meet the requirements in Appendix 3-3</li> <li>- there is either gravity or mechanical exhaust ventilation systems</li> <li>- the exhaust system provides for six changes of air in the room per hour</li> <li>- mechanical exhaust systems are controlled by a switch outside the door and have exhaust outlets on exterior walls</li> <li>- for gravity ventilation, the fresh air intake is on exterior walls</li> <li>- there is one clear aisle at least 3 ft [0.91 m] wide</li> <li>- containers over 30 gal [113.56 L] capacity are not stacked one upon the other</li> <li>- dispensing is done by an approved pump or self-closing faucet.</li> </ul>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-36.</b> The storage of flammable or combustible liquids in warehouses or storage buildings shall meet specific requirements (29 CFR 1910.106(d)(5)(vi)).</p>	<p>Verify that the following requirements are met:</p> <ul style="list-style-type: none"> <li>- if the storage facility is located 50 ft [15.24 m] or less from a building or line of adjoining property that may be built upon, the exposing wall is a blank wall having a fire-resistance rating of at least 2 h</li> <li>- any quantity of liquids may be stored as long as the storage arrangements outlined in Appendix 3-4 are met</li> <li>- containers are separated by pallets or dunnage when necessary to provide stability and prevent excess stress on container walls</li> <li>- portable tanks which are stored over one tier high are designed to nest securely</li> <li>- no pile is closer than 3 ft [0.91 m] to the nearest beam, chord, girder, or other obstruction</li> <li>- piles are 3 ft [0.91 m] below sprinkler deflectors or discharge points of water spray</li> <li>- all wood shelving is at least 1 in. [2.54 cm] thick</li> <li>- aisles are at least 3 ft [0.91 m] wide when necessary for access to doors, windows, or standpipe connections.</li> </ul>
<p><b>3-37.</b> Flammable/combustible materials stored outside of buildings must meet certain storage and handling criteria (29 CFR 1910.106(d)(6)).</p>	<p>Verify that outdoor flammable/combustible storage meets the following:</p> <ul style="list-style-type: none"> <li>- no more than 1100 gal [4163.95 L] of flammable/combustible liquids is stored adjacent to buildings located on the same premises unless 10 ft [3.05 m] or more exists between buildings and the nearest flammable container</li> <li>- the storage area is graded to divert spills or is surrounded by a curb at least 6 in. [15.24 cm] high</li> <li>- drains terminate in a safe location</li> <li>- the storage area is protected against tampering and kept free of waste and other combustible materials</li> <li>- all containers bear contents, labels, and hazard markings</li> <li>- total quantity and arrangement of liquids outside a building complies with the requirements in Appendix 3-4.</li> </ul> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engines</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-38.</b> Areas where flammable/combustibles are stored must meet certain fire protection standards (29 CFR 1910.106(d)(7)).</p>	<p>Verify that all flammable/combustible storage locations meet the following:</p> <ul style="list-style-type: none"> <li>- there is at least one 12-B rated portable fire extinguisher located outside and within 10 ft [3.05 m] of a door opening into any room for storage</li> <li>- there is at least one 12-B rated portable fire extinguisher located within 10 to 25 ft [3.05 to 7.62 m] of any Class I or Class II liquid storage area outside of a storage room, but inside a building</li> <li>- fire extinguishing sprinklers or systems meet the standards in 29 CFR 1910.159</li> <li>- no smoking or open flame is permitted within 50 ft [15.24 m] and signs are posted</li> <li>- incompatible materials are not stored together (see Appendix 3-5)</li> <li>- no water reactive materials are stored in the same room with flammable/combustible liquids.</li> </ul> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> <li>- storage of containers in service stations, Class I or Class II liquids in the fuel tanks of a motor vehicles, aircraft, boat, or portable or stationary engines</li> <li>- flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days.)</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>FLAMMABLE COMBUSTIBLE LIQUIDS STORAGE</b></p> <p><b>Industrial Areas</b></p> <p>3-39. Areas where flammable/combustible materials are stored, dispensed, or used in industrial plants shall meet specific guidelines (29 CFR 1910.106(e)(4) through 1910.106(e)(9)).</p>	<p>(NOTE: Checklist items 3-39 through 3-41 pertain to industrial areas where the use of flammable or combustible liquid is incidental to the principal business or where flammable or combustible liquids are handled or used only in unit physical operations such as drying, evaporating, filtering, distillation, and similar operations which do not involve chemical reactions.)</p> <p>Verify that the following provisions are met:</p> <ul style="list-style-type: none"> <li>- portable fire extinguishers and fire control equipment shall be in place in quantity and type as needed for the hazards of operation and storage at the site</li> <li>- adequate precautions shall be taken to prevent sources of ignition at the site</li> <li>- Class I liquids shall not be dispensed into containers unless nozzles and containers are electrically interconnected</li> <li>- operations such as welding and cutting for repairs to equipment shall be done under the supervision of an individual in responsible charge</li> <li>- maintenance and operating practices shall control leakage and prevent the accidental escape of flammable or combustible liquids: <ul style="list-style-type: none"> <li>- adequate aisles shall be maintained</li> <li>- combustible waste material and residues shall be kept to a minimum, stored in covered metal containers, and disposed of daily</li> <li>- the grounds area around the buildings and unit operating areas shall be kept free of weeds, trash, or other unnecessary combustibles</li> </ul> </li> <li>- tank vehicle and tank car loading or unloading facilities are separated from aboveground tanks, warehouses, and other plant buildings or nearest line of adjoining property by a distance of 25 ft [7.62 m] for Class I liquids and 15 ft [4.57 m] for Class II and III liquids.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-40. Incidental storage of flammable/combustible liquids in industrial areas must conform to certain requirements (29 CFR 1910.106(e)(2)).</b></p>	<p>Verify that flammable and combustible liquids are stored in closed containers.</p> <p>Verify that the storage areas meet the requirements outlined in 29 CFR 1910.106(d)(3) through 1910.106(d)(4) as listed in checklist items 3-33 and 3-35 except that:</p> <ul style="list-style-type: none"> <li>- the quantity of liquid that can be located outside of an inside storage room or storage cabinet in a building or in any one fire area of a building shall not exceed: <ul style="list-style-type: none"> <li>- 25 gal [94.64 L] of Class IA liquids in containers</li> <li>- 120 gal [454.25 L] of Class IB, IC, II, or III liquids in containers</li> <li>- 660 gal [2498.37 L] of Class IB, IB, II, or III liquids in a single portable tank</li> </ul> </li> <li>- where large quantities of flammable or combustible liquids are needed, storage may be in tanks.</li> </ul> <p>Verify that areas where flammable/combustible liquids are transferred from one container to another container are separated from other operations in the building by an adequate distance or by construction having fire resistance.</p> <p>Verify that drainage or other means is provided to contain spills and adequate natural or mechanical ventilation is present.</p> <p>Verify that the following practices are observed at the point of final use:</p> <ul style="list-style-type: none"> <li>- flammable liquids are kept in covered containers when not actually in use</li> <li>- where flammable/combustible liquids are used or handled means are provided to dispose of promptly and safely spills and leaks</li> <li>- Class I liquids are only used where there are no open flames or other sources of ignition</li> <li>- flammable/combustible liquids are drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks, by gravity through an approved self closing valve. Transferring by means of air pressure on the container or portable tanks is prohibited.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-41.</b> Those areas where flammable/ combustible liquids are used in unit operations such as mixing, drying, evaporating, filtering, or distillation are required to meet specific operating standards (29 CFR 1910.106(e)(3)).</p>	<p>Verify that the following parameters are met:</p> <ul style="list-style-type: none"> <li>- these areas are located so that each building or unit of equipment is accessible from at least one side for fire fighting</li> <li>- areas where unstable liquids are handled or small scale unit chemical processes are carried on shall be separated from the remainder of the area by a fire wall of a 2 h minimum fire resistance rating</li> <li>- emergency drainage systems direct leakage and fire protection water to a safe location</li> <li>- emergency drainage systems, if connected to public sewers or discharged into public waterways, are equipped with traps or a separator</li> <li>- when Class I liquids are being used, ventilation is provided at a rate of not less than 1 ft<sup>3</sup>/min/ft<sup>2</sup> of solid floor area through either natural or mechanical means</li> <li>- equipment is designed to limit flammable vapor-air mixtures.</li> </ul>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>FLAMMABLE COMBUSTIBLE LIQUID STORAGE</b>  <b>Tanks</b>  <b>3-42.</b> Tanks used for the storage of flammable/combustible liquids are required to meet specific design and construction standards (29 CFR 1910.106 (b)(1)).	<p>Verify that tanks are built of steel unless:</p> <ul style="list-style-type: none"> <li>- the tank is installed underground</li> <li>- the properties of the liquid being stored requires materials other than steel be used</li> <li>- the tank is designed according to specifications embodying principles recognized as good engineering design for the materials used</li> <li>- it is an unlined concrete tank that stores flammable or combustible liquids having a gravity of 40 degrees API or heavier.</li> </ul> <p>(NOTE: API gravity is a scale adopted by the American Petroleum Institute for measuring the density of oils.)</p> <p>Verify that tanks located above ground or inside buildings are of noncombustible construction.</p> <p>(NOTE: Tanks designed for underground service not exceeding 2500 gal [9463.53 L] capacity may be used above ground and low-pressure tanks and pressure vessels may be used as atmospheric tanks.)</p> <p>Verify that atmospheric tanks are not used for the storage of a flammable or combustible liquid at a temperature at or above its boiling point.</p> <p>Verify that the normal operating pressure of a low pressure tank does not exceed the design pressure of the tank.</p>
<b>3-43.</b> Outside above-ground tanks used for the storage of flammable/combustible liquids are required to be installed according to specific parameters (29 CFR 1910.106(b)(2)(i) through 1910.106 (b)(2)(ii)).	<p>Verify that there is a minimum distance of 3 ft [0.91 m] between any two tanks.</p> <p>Verify that the distance between any two adjacent tanks is not less than one-sixth the sum of their diameters.</p> <p>(NOTE: When the diameter of one tank is less than half the diameter of the adjacent tank, the distance between the two tanks shall not be less than one-half the diameter of the smaller tank.)</p> <p>Verify that where unstable flammable or combustible liquids are stored, the distance between the tanks is not less than one-half the sum of their diameters.</p> <p>Verify that when tanks are compacted in three or more rows or in an irregular pattern, greater spacing or other means is provided for firefighting access.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
3-43. (continued)	<p>Verify that there is a minimum distance of 20 ft [6.1 m] between a liquefied petroleum gas (LPG) container and a flammable or combustible liquid storage tank.</p> <p>(NOTE: In the case of flammable or combustible liquid tanks operating at pressure exceeding 2.5 psig or equipped with emergency venting which will permit pressures to exceed 2.5 psig spacing of 3 ft [0.91 m] or the use of the formula concerning one-sixth of diameters may be used.)</p> <p>Verify that means such as diversion curbs or grading are provided to prevent the accumulation of flammable or combustible liquids under adjacent LPG containers.</p> <p>Verify that if flammable combustible liquid storage tanks are within a diked area, LPG containers are outside the diked area and at least 10 ft [3.05 m] away from the centerline of the wall of the diked area.</p> <p>(NOTE: The requirement concerning LPG containers and diked areas does not apply if LPG containers of 125 gal [473.18 L] or less capacity are installed adjacent to fuel oil supply of 550 gal [2081.98 L] or less capacity.)</p>
3-44. Tanks for the storage of flammable/combustible liquids are required to meet specific containment requirements (29 CFR 1910.106(b)(2)(vii)).	<p>Verify that the area surrounding a tank or a group of tanks is either provided with drainage or diked as follows:</p> <ul style="list-style-type: none"> <li>- drainage systems terminate in vacant land or other area or in an impounding basin having a capacity not smaller than that of the largest tank served</li> <li>- diked areas have a volumetric capacity of not less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a fuel tank.</li> </ul> <p>Verify that walls of diked areas are of earth, concrete, steel, or solid masonry designed to be liquid tight.</p> <p>Verify that earthen walls 3 ft [0.91 m] or more in height have a top that is no less than 2 ft [0.61 m] wide.</p> <p>Verify that the walls of the diked area are restricted to an average height of 6 ft [1.83 m] above interior grade.</p> <p>Verify that there are no loose combustible materials or empty or full drums or barrels within the diked area.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-45.</b> In locations where flammable vapors may be present from storage tanks, precautions are required to be taken to prevent ignition (29 CFR 1910.106(b)(6)).</p> <p><b>3-46.</b> Tanks used for the storage of flammable/combustible liquids are required to be strength tested before being placed into service (29 CFR 1910.106 (b)(7)).</p>	<p>Verify that sources of ignition such as open flames, smoking, welding and cutting, hot surfaces, sparks, and radiant heat are avoided.</p> <p>Verify that the tank is marked with an American Society of Mechanical Engineers (ASME) code stamp, API monogram, or the label of the Underwriter's Laboratory as evidence of having had a strength test.</p>



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REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<b>COMPRESSED GASES STORAGE</b>  3-47. The in-plant storage, handling, and utilization of all compressed gases in cylinders, portable tanks, rail tankers, or motor vehicles must be done according to the Compressed Gas Association Pamphlet P-1-1965 (29 CFR 1910.101).  3-48. Compressed gases should be handled according to specific procedures and practices (GMP).	<p>Verify that compressed gas cylinders and tanks have safety relief devices.</p> <p>Verify the compressed gas tanks which are standing are secured.</p> <p>Verify that the following practices and procedures are followed:</p> <ul style="list-style-type: none"><li>- oxygen cylinders are free from grease or oil</li><li>- numbers or markings that are stamped on the cylinders are not altered or defaced</li><li>- additional markings are not applied to cylinders without approval</li><li>- empty cylinders are stored separately but in the same manner as full cylinders</li><li>- valves on empty cylinders are closed</li><li>- No SMOKING signs are posted in and around compressed gas storage sheds.</li></ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ACID STORAGE</b></p> <p><b>3-49.</b> Bulk storage of acids should meet certain storage and handling criteria (GMP).</p>	<p>Verify that bulk acid storage sites meet the following:</p> <ul style="list-style-type: none"> <li>- building are one story in height, preferably of nonflammable construction</li> <li>- there are permanent louvered openings at floor and ceiling levels or other gravity ventilation method</li> <li>- there is safety equipment available and operating (eye wash, deluge shower, self-contained breathing apparatus, protective clothing)</li> <li>- the building is heated to prevent freezing (if applicable)</li> <li>- different acids are stored in separate spaces or noncombustible sealed barriers at least 3 ft [0.91 m] high between acids</li> <li>- NO SMOKING are signs posted</li> <li>- automatic sprinkler protection is provided</li> <li>- workers are provided with protective safety equipment and a copious, flowing supply of fresh, clean water for first aid.</li> </ul>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>TRANSPORTATION</b></p> <p><b>3-50.</b> Shipping papers for hazardous materials are required to indicate the proper shipping name, hazard class, identification number, and quantities of materials (49 CFR 172.202).</p> <p><b>3-51.</b> Each package or container, shall be marked in accordance with specific marking requirements (49 CFR 171.3).</p> <p><b>3-52.</b> The facility is responsible for providing proper placarding to vehicles transporting hazardous materials off the facility (49 CFR 172.500).</p>	<p>(NOTE: The regulations found in Title 49, Subchapter C of the CFR detail requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply when materials are being transported in commerce. According to a representative from the Department of Transportation, commerce is defined in terms of making a profit in this instance, therefore Subchapter C does not apply to Federal agencies when Government personnel are transporting hazardous materials in Government vehicles. But, the regulations do apply when transport is occurring in non-Government vehicles.)</p> <p>Verify that the proper information is displayed on the shipping papers for the hazardous material.</p> <p>Verify that the commodity description (proper shipping name) is on the container as well as the following information:</p> <ul style="list-style-type: none"> <li>- exemption numbers for containers shipped under DOT exemptions</li> <li>- the name and address of consignee (or consignor) on the container.</li> </ul> <p>Determine if facility vehicles are used to transport hazardous materials off the facility.</p> <p>Determine if proper DOT placards, as described in 49 CFR 172.504 through 172.558, are affixed to vehicles being used to transport hazardous materials offsite.</p> <p>Determine if transportation has proper DOT placards for vehicles which are being used for transport of hazardous materials.</p> <p>(NOTE: Observe, if practical, the placarding of vehicles used to transport hazardous materials.)</p> <p>(NOTE: See Appendix 3-6 for sample wording of placards.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>3-53. The facility should ensure that transportation of hazardous materials between buildings is accomplished in accordance with good management practices to help ensure against spills, releases, and accidents (GMP).</p> <p>3-54. A facility that offers for transport, accepts for transport, transfers, or otherwise handles a hazardous material must have emergency response information available (49 CFR 172.600 through 172.604).</p>	<p>Determine if procedures exist to manage movement of hazardous materials throughout the facility.</p> <p>Determine if drivers are trained in spill control procedures.</p> <p>Determine if provisions have been made for securing hazardous materials in vehicles when transporting.</p> <p>Verify that emergency response information includes:</p> <ul style="list-style-type: none"> <li>- the description of the hazardous material required by 49 CFR 172.202-203</li> <li>- immediate hazards to health</li> <li>- risks of fire or explosion</li> <li>- immediate precautions to take in the event of an accident or incident</li> <li>- immediate methods for handling small or large fires</li> <li>- immediate methods for handling spills or leaks in the absence of fire</li> <li>- preliminary first aid measures.</li> </ul> <p>(NOTE: Shipping papers must contain an emergency response telephone number for the hazardous material being shipped.)</p> <p>Verify that each carrier and facility operators maintain this emergency response information.</p>
<p>3-55. Spills, leaks, and other incidents occurring during hazardous material transportation require immediate notification in specific circumstances (49 CFR 171.15).</p>	<p>Verify that immediate notification is done for those incidents in which, as a direct result of hazardous materials:</p> <ul style="list-style-type: none"> <li>- a person is killed</li> <li>- a person is injured and requires hospitalization</li> <li>- estimated carrier or other property damage exceeds \$50,000</li> <li>- an evacuation of the general public occurs lasting 1 or more hours</li> <li>- one or more major transportation arteries or facilities are closed or shut down for 1 or more hours</li> <li>- the operational flight pattern of an aircraft is altered</li> <li>- fire, breakage, spillage, or suspected radioactive contamination occurs involving shipment of radioactive materials</li> <li>- fire, breakage, spillage, or suspected contamination occurs involving shipment of ethiologic agents</li> <li>- the carrier feels the situation merits reporting, even though it does not meet the above requirements.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
3-55. (continued)	<p>Verify that the immediate notification is given to the DOT by telephone.</p> <p>(NOTE: If the notice involves etiologic agents, it may be given to the Centers for Disease Control and Prevention (CDC).)</p>
<p>3-56. Written hazardous materials incident reports are required to be submitted to the DOT of each hazardous material incident within 30 days of the incident (49 CFR 171.16).</p>	<p>Verify that detailed hazardous materials incident reports are submitted to the DOT within 30 days if:</p> <ul style="list-style-type: none"> <li>- any of the circumstances of 49 CFR 171.15 are met</li> <li>- there has been an unintentional release of hazardous materials from a package</li> <li>- any quantity of hazardous materials has been discharged during transportation.</li> </ul> <p>(NOTE: Guidelines for assistance in completing a DHMIR may be obtained free of charge from the Office of Hazardous Materials Transportation, DHM-51, U.S. Department of Transportation, Washington DC 20590.)</p> <p>Verify that a copy of the report is retained on site for 2 yr (unless written permission has been obtained from the DOT to maintain records elsewhere).</p>
<p>3-57. Facilities are required to train each of its employees involved in the transportation of hazardous materials according to specific requirements (49 CFR 172.704(a), 172.704(b), 172.704(c)(3), 172.704(c)(4), 172.704(e), and 173.1(b)).</p>	<p>(NOTE: Training conducted by facilities to comply with the hazard communication programs required by the Occupational Safety and Health Administration (OSHA) of the Department of Labor (29 CFR 1910.120) or the USEPA (40 CFR 311.1) may be used to satisfy these requirements to the extent that the training addresses the requirements.)</p> <p>(NOTE: Relevant training received by the employee from a previous employer or other source may be used to satisfy these requirements, provided a current record of the training is obtained from the employee's previous employer.)</p> <p>Verify that each employee is provided with general awareness/familiarization training designed to do the following:</p> <ul style="list-style-type: none"> <li>- provide familiarity with the requirements of 49 CFR 171 through 177</li> <li>- enable each employee to recognize and identify hazardous materials consistent with the hazard communication standards of 49 CFR 171 through 177.</li> </ul> <p>Verify that each employee is provided with function-specific training concerning those requirements of 49 CFR 171 through 177 that are specifically applicable to the functions the employee performs.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-57. (continued)</b></p>	<p>(NOTE: Training related to the requirements of the ICAO Technical Instructions and the IMDG Code may be provided as an alternative to function-specific training on the requirements of 49 CFR 171 through 177 to the extent such training addresses functions authorized by 49 CFR 171.11 and 171.12.)</p> <p>Verify that each employee is provided with function-specific training concerning exemptions issued under 49 CFR 106, 107, and 110 that are specifically applicable to the functions the employee performs.</p> <p>Verify that each employee is provided with safety training concerning the following:</p> <ul style="list-style-type: none"> <li>- emergency response information</li> <li>- methods and procedures for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials</li> <li>- measures to protect the employee from the hazards associated with hazardous materials to which they may be exposed to in the workplace, including specific measures the employer has implemented to protect employees from exposure.</li> </ul> <p>(NOTE: This requirement does not apply to an employee who repairs, modifies, reconditions, or tests packaging as qualified for use in the transportation of hazardous materials, and who does not perform any other function subject to the requirements of 49 CFR 171 through 177.)</p>
<p><b>3-58. Facility employees that operate motor vehicles transporting hazardous materials must be appropriately trained (49 CFR 177.816(a) and 177.816(c)).</b></p>	<p>(NOTE: This requirement may be met by compliance with the current requirements for a Commercial Driver's License (CDL) with a tank vehicle or hazardous materials endorsement.)</p> <p>Verify that the motor carrier does not transport (or cause to be transported) a hazardous material unless each hazmat employee who will operate a motor vehicle has been trained in the following:</p> <ul style="list-style-type: none"> <li>- the applicable requirements prescribed in 49 CFR 390 through 397</li> <li>- the procedures necessary for the safe operation of that vehicle.</li> </ul> <p>Verify that each driver receives driver training that includes the following subjects:</p> <ul style="list-style-type: none"> <li>- pretrip safety inspection</li> <li>- use of vehicle controls and equipment, including operation of emergency equipment</li> <li>- procedures for maneuvering tunnels, bridges, and railroad crossings</li> <li>- requirements pertaining to attendance of vehicles, parking, smoking, routing, and incident reports</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>3-58. (continued)</b>	<ul style="list-style-type: none"> <li>- loading and unloading of materials, including load securement, package handling methods, and compatibility and segregation of cargo in a mixed load</li> <li>- operation of the vehicle, including turning, backing, braking, parking, and handling</li> <li>- vehicle characteristics, including those that affect vehicle stability, such as the following:               <ul style="list-style-type: none"> <li>- effects of braking and curves</li> <li>- effects of speed on vehicle control</li> <li>- dangers associated with maneuvering through curves</li> <li>- dangers associated with weather or road conditions that a driver may experience</li> <li>- high center of gravity.</li> </ul> </li> </ul>
<b>3-59. Facility employees that operate cargo tanks or vehicles with portable tanks having a capacity of 1000 gal or more of hazardous materials must be appropriately trained (49 CFR 177.816(b) through 177.826(d)).</b>	<p>(NOTE: This requirement may be met by compliance with the current requirements for a CDL with a tank vehicle or hazardous materials endorsements.)</p> <p>Verify that each hazmat employee who operates a cargo tank or vehicle with a portable tank with a capacity of 1000 gal or more receives training applicable to the requirements of 49 CFR 171 through 177.</p> <p>Verify that each employee has the appropriate state-issued CDL.</p> <p>Verify that each employee receives specialized training that includes the following subjects:</p> <ul style="list-style-type: none"> <li>- operation of emergency control features of the cargo tank and portable tank</li> <li>- retest and inspection requirements for cargo tanks</li> <li>- loading and unloading procedures</li> <li>- the properties and hazards of the material transported</li> <li>- special vehicle handling characteristics, including the following:               <ul style="list-style-type: none"> <li>- high center of gravity</li> <li>- fluid load subject to surge</li> <li>- effects of fluid-load surge on braking</li> <li>- characteristic differences in stability among baffled, unbaffled, and multi-compartmented tanks</li> <li>- effects of partial loads on vehicle stability.</li> </ul> </li> </ul>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>3-60.</b> Facilities must meet specific requirements regarding training schedules (49 CFR 172.704(c)(1) through 172.704(c)(3)).</p>	<p>Verify that training for an employee on or before 2 July 1993 is completed prior to 1 October 1993.</p> <p>Verify that training for an employee employed after 2 July 1993 is completed within 90 days after employment.</p> <p>Verify that an employee who changes hazardous materials job functions completes training in the new job function(s) within 90 days after the change.</p> <p>(NOTE: An employee may perform new hazardous materials job functions prior to the completion of training provided that the employee performs those functions under the supervision of a properly trained and knowledgeable employee.)</p> <p>Verify that the employee receives the required training at least once every 2 yr.</p>
<p><b>3-61.</b> Facilities are required to maintain training records (49 CFR 172.704(d)).</p>	<p>Verify that a record of current training, inclusive of the preceding 2 yr, is created and retained by the facility for each employee for as long as that employee is employed by the facility as an employee and for 90 days thereafter.</p> <p>Verify that the record includes the following:</p> <ul style="list-style-type: none"> <li>- the employee's name</li> <li>- the most recent training completion date of the employee's training</li> <li>- a description, copy, or the location of the training materials used</li> <li>- the name and address of the person providing the training</li> <li>- certification that the employee has been trained and tested.</li> </ul>

## Appendix 3-1

### Consolidated List of Chemicals Covered in EPCRA

This consolidated chemical list includes chemicals subject to reporting requirements under EPCRA. This consolidated chemical list does not contain all chemicals that are subject to reporting requirements in EPCRA. These hazardous chemicals, for which MSDS must be developed under the *Occupational Safety and Health Act Hazard Communication Standards*, are identified by broad criteria, rather than enumeration. There are over 50,000 such substances that meet the criteria. The consolidated list has been prepared to help determine whether there is a need to submit reports under EPCRA and, for a specific chemical, what reports need to be submitted.

The list includes chemicals under the four following Federal statutory provisions implemented by EPCRA:

1. SARA Section 302 Extremely Hazardous Substances - The presence of which, in sufficient quantities, requires certain emergency planning activities to be conducted. Releases of these substances are also subject to reporting under Section 304 of Title III. The final rule listing the extremely hazardous substances and their threshold planning quantities (TPQ), is found in 40 CFR 355.
2. CERCLA Hazardous Substances (RQ) Chemicals - Releases of which are subject to reporting under the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) of 1980*. Such releases are also subject to reporting under Section 304 of Title III. CERCLA hazardous substances, and their reportable quantities (RQ), are listed in 40 CFR 302, Table 302.4.
3. SARA Section 313 Toxic Chemicals - Emissions or releases of which must be reported annually as part of SARA Title III's community right-to-know provisions. A list of these toxic chemicals is found in 40 CFR 372.65.
4. RCRA Hazardous Wastes - from the "P" and "U" lists (40 CFR 261.33), of specific chemicals. RCRA hazardous wastes from the "F" and "K" lists are not included here; such waste streams are also CERCLA hazardous substances. This listing is provided as an indicator that you may already have data on a specific chemical that can be used for Title III reporting purposes.

There are four columns in the consolidated list corresponding to these four statutory provisions. If a chemical is listed as an extremely hazardous substance under Section 302, its TPQ is given in the extremely hazardous substance column. Similarly, the CERCLA RQ is given for those chemicals that are listed as hazardous substances. A key to the symbols used in the Section 302 and CERCLA columns precedes the list. An "X" in the column for Section 313 indicates that the chemical is subject to reporting under Section 313.

The letter-and-digit code in the column for 40 CFR 261.33 is the chemical's RCRA hazardous waste code. A blank in any of these columns indicates that the chemical is not subject to the corresponding statutory authorities.

The Chemical Abstract Service (CAS) registry number is provided for each chemical on the list.

(continued)

## Appendix 3-1 (continued)

### Key to Symbols in the Consolidated Chemical List

- # Indicates that the RQ is subject to change when an assessment of potential carcinogenicity and/or chronic toxicity is completed; until then, the statutory RQ applies.
- ## Indicates that an adjusted RQ has been proposed, but a final judgment has not been made.
- + USEPA has proposed to adjust the RQ for radionuclides by establishing RQs in units of curies; until then, the 1 lb RQ applies.
- \* Indicates that the chemical is proposed for deletion from the list of extremely hazardous substances.
- \*\* Indicates that no RQ is assigned to this generic or broad class.

### CONSOLIDATED CHEMICAL LIST

**This is an alphabetical listing of the consolidated list of chemicals. Numbered chemicals are listed first.**

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,Amino-2-methyl- anthraquinone			x		82-28-0
1-Butanamine,N-butyl-N- nitroso-		10	x	U172	924-16-3
1-Chloro-1,1-difluoroethane (HCFC-142(b))			x		75-68-3
1-Chloro-1,1,2,2-tetrafluoroet- hane (HCFC-124a)			x		354-25-6
1-Methylbutadiene		100		U186	504-60-9
1-Naphthalamine		100	x	U167	134-32-7
1-Propanamine		5000		U194	107-10-8
1-Propanol,2,3-dibromo-phos- phate (3:1)		10	x	U235	126-72-7
(1,1'-Biphenyl)-4,4'diamine, 3,3'dimethoxy-		100	x	U091	119-90-4
(1,1'-Biphenyl)-4,4'diamine, 3,3'dimethyl-		10	x	U095	119-93-7
1,1-Dichloro-1-fluoroethane (HCFC-141b)			x		1717-80-6

(continued)



### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)			x		812-04-4
1,1-Dichloroethane		1000		U076	75-34-3
1,1-Dichloroethylene		100	x	U078	75-35-4
1,1,1,2-Tetrachloroethane			x		630-20-6
1,2-Benzenedicarboxylic acid,[bis(2-ethylhexyl)]ester		100	x	U028	117-81-7
1,2-Benzenedicarboxylic acid, diethyl ester (diethyl phthalate)		1000	x	U088	84-66-2
1,2-Benzenediol,4-[1-hydroxy-2-(methylamino) ethyl]-		1000		P042	51-43-4
1,2-Benzisothiazolin-3(2H) one,1,1-dioxide		100	x	U202	81-07-2
1,2-Benzphenanthrene		100		U050	218-01-9
1,2-Butylene oxide			x		106-88-7
1,2-Dibromo-3-chloropropane		1	x	U066	96-12-8
1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)			x		354-23-4
1,2-Dichloroethane		100	x	U077	107-06-2
1,2-Dichloroethylene			x		540-59-0
1,2-Dichloropropane		1000	x	U083	78-87-5
1,2-Dimethylhydrazine		1		U099	540-73-8
1,2-Diphenylhydrazine		10	x	U109	122-66-7
1,2-Oxathiolane,2,2-dioxide		10	x	U193	1120-71-4
1,2-trans-Dichloroethylene		1000		U079	156-60-5
1,3-Benzenediol		5000		U201	108-46-3
1,3-Benzodioxole, 5-propyl		10		U090	94-58-6
1,3-Benzodioxole,5-)1-1 propenyl		100	x	U141	120-58-1
1,3-Benzodioxole, 5-) 2,propenyl		100	x	U203	94-59-7

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
1,3-Butadiene			x		106-99-0
1,3-Dichloropropylene		100	x	U084	542-75-6
1,3-Isobenzofurandione		5000	x	U190	85-44-9
1,4-Dichloro-2-butene			x		764-41-0
1,4-Diethylene dioxide (1,4-Dioxane)		100	x	U108	123-91-1
1,4-Naphthalenedione		5000		U166	130-15-4
2-Acetylaminofluorene		1	x	U005	53-96-3
2-Aminoanthraquinone			x		117-79-3
2-Butanone peroxide		10		U160	1338-23-4
2-Butanone (Methyl ethyl ketone)		5000	x	U159	78-93-3
2-Butene, 1,4-dichloro-		1		U074	764-41-0
2-Chloro-1,1,2,2-tetrafluoroethane (HCFC 124)			x		2837-89-0
2-Chloroacetophenone			x		532-27-4
2-Chloroethyl vinyl ether		1000		U042	110-75-8
2-Chlorophenol		100		U048	95-57-8
2-Cyclohexyl-4,6-dinitrophenol		100		P034	131-89-5
2-Ethoxyethanol		100	x		110-80-5
2-Furancarboxaldehyde		5000		U125	98-01-1
2-Methoxyethanol			x		109-86-4
2-Methylpyridine			x		109-06-8
2-Naphthylamine		10	x	U168	91-59-8
2-Nitropropane		10	x	U171	79-46-9
2-Phenylphenol			x		90-43-7
2-Picoline		5000		U191	109-06-8
2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)			x		306-83-2
2,2-Dichloropropionic acid		5000			75-99-0
2,3-Dichloropropene		100	x		78-88-6

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
2,3,4-Trichlorophenol		10	x		15950-66-0
2,3,5-Trichlorophenol		10			933-78-8
2,3,6-Trichlorophenol		10			933-75-5
2,3,7,8-Tetrachlorodibenzo p- dioxin (TCDD)		1			1746-01-6
2,4-D acid		100	x	U240	94-75-7
2,4-D esters		100			94-11-1
2,4-D esters		100			94-79-1
2,4-D esters		100			94-80-4
2,4-D esters		100			1320-18-9
2,4-D esters		100			1928-38-7
2,4-D esters		100			2971-38-2
2,4-D esters		100			53467-11-1
2,4-D esters		100			1928-61-6
2,4-D esters		100			1929-73-3
2,4-D esters		100			25168-26-7
2,4-Diaminoanisoie sulfate			x		39156-41-7
2,4-Diaminosole			x		615-41-7
2,4-Diaminotoluene		10		U221	823-40-5
2,4-Dichlorophenol		100	x	U081	120-83-2
2,4-Dimethylphenol		100	x	U101	105-67-9
2,4-Dinitrophenol		10	x	P048	51-28-5
2,4,5-T esters		1000			25168-15-4
2,4,5-T salts		1000			13560-99-1
2,4,5-T amines		5000			1319-72-8
2,4,5-T amines		5000			3813-14-7
2,4,5-T amines		5000			6369-96-6
2,4,5-T amines		5000			6369-97-7
2,4,5-T amines		5000			2008-46-0

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
2,4,5-T esters		1000			93-79-8
2,4,5-T esters		1000			1928-47-8
2,4,5-T esters		1000			2545-59-7
2,4,5-T esters		1000			61792-07-2
2,4,5-T		1000		U232	93-76-5
2,4,5-TP acid esters		100			32534-95-5
2,5-Furandione		5000	x	U147	108-31-6
2,6-Dichlorophenol		100		U082	87-65-0
2,6-Xylidine			x		87-62-7
3,3-Dichlorobenzidine			x		91-94-1
3,4-Diaminotoluene		10	x	U221	95-80-7
3,4-Dinitrotoluene		10			610-39-9
3,4,5-Trichlorophenol		10			609-19-8
3,5-Dichloro-N-(1,1-dimethyl- 2-propynyl) benzamide		5000		U192	23950-58-5
4-Aminoazobenzene			x		60-09-3
4-Aminobiphenyl			x		92-67-1
4-Chloro-m-cresol		5000		U039	59-50-7
4-Chlorophenyl phenyl ether		5000			7005-72-3
4-Nitrobiphenyl			x		92-93-3
4,4'-Diaminodiphenyl ether			x		101-80-4
4,4'-Isopropylidenediphenol			x		80-05-7
4,4'-Methylene bis(N,N-di- methyl) benzenamine			x		101-61-1
4,4'-Methylenedianiline			x		101-77-9
4,4'-Thiodianiline 6-dinitrophe- noll			x		139-65-1
5-Nitro-o-anisidine			x		99-59-2
5-Nitro-o-toluidine			x		99-55-6
Acenaphthene		100			83-32-9

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Acenaphthylene		5000			208-96-8
Acetaldehyde		1000	x	U001	75-07-0
Acetaldehyde, trichloro-		5000		U034	75-87-6
Acetamide			x		60-35-5
Acetamide-N-(4-ethoxyphe- nyl)-		100		U187	62-44-2
Acetamide,N-(aminothi-oxom- ethyl)-		1000		P002	591-08-2
Acetic acid		5000			64-19-7
Acetic acid, ethyl ester		5000		U112	141-78-6
Acetic acid, fluoro, sodium salt	10/10,000	10		P058	62-74-8
Acetic acid, lead(2+) salt		10		U144	301-04-2
Acetic acid, thallium(1+) salt		100		U214	563-68-8
Acetic anhydride		5000			108-24-7
Acetone		5000	x	U002	67-64-1
Acetone cyanohydrin	1000	10		P069	75-86-5
Acetone thiosemicarbazide	1000/10,000				1752-30-3
Acetonitrile		5000	x	U003	75-05-8
Acetophenone		5000	x	U004	98-86-2
Acetyl bromide		5000			506-96-7
Acetyl chloride		5000		U006	75-36-5
Acrolein	500	1	x	P003	107-02-8
Acrylamide	1000/10,000	5000	x	U007	79-06-1
Acrylic acid		5000	x	U008	79-10-7
Acrylonitrile	10,000	100	x	U009	107-13-1
Acrylyl chloride	100				814-68-6
Adipic acid		5000			124-04-09
Adiponitrile	1000				111-69-3
Aldicarb	100/10,000	1		P070	116-06-3
Aldrin	500/10,000	1	x	P004	309-00-2

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Allyl alcohol	1000	100	x	P005	107-18-6
Allyl chloride		1000	x		107-05-1
Allylamine	500				107-11-9
alpha,alpha-Dimethyl phenethylamine		5000		P046	122-09-8
alpha-Endosulfan		1			959-98-8
alpha-BHC		10			319-84-6
Aluminum (fume or dust)			x		7429-90-5
Aluminum oxide (fibrous forms)			x		1344-28-1
Aluminum phosphide	500	100		P006	20859-73-8
Aluminum sulfate		5000			10043-01-3
Aminopterin	500/10,000				54-62-6
Amiton	500				78-53-5
Amiton oxalate	100/10,000				3734-97-2
Amitrole		10	x	U011	61-82-5
Ammonia	500	100	x		7664-41-7
Ammonium acetate		5000			631-61-8
Ammonium benzoate		5000			1863-63-4
Ammonium bicarbonate		5000			1066-33-7
Ammonium bichromate		10			7789-09-5
Ammonium bifluoride		100			1341-49-7
Ammonium bisulfite		5000			10192-30-0
Ammonium carbamate		5000			1111-78-0
Ammonium carbonate		5000			506-87-6
Ammonium chloride		5000			12125-02-9
Ammonium chromate		10			7788-98-9
Ammonium citrate,dibasic		5000			3012-65-5
Ammonium fluoborate		5000			13826-83-0
Ammonium fluoride		100			12125-01-8

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ammonium hydroxide		1000			336-21-6
Ammonium nitrate (solution)			x		6484-52-2
Ammonium oxalate		5000			5972-73-6
Ammonium oxalate		5000			6009-70-7
Ammonium oxalate		5000			14258-49-2
Ammonium picrate		10		P009	131-74-8
Ammonium silicofluoride		1000			16919-19-0
Ammonium sulfamate		5000			7773-06-0
Ammonium sulfate (solution)			x		7783-20-2
Ammonium sulfide		100			12135-76-1
Ammonium sulfite		5000			10196-04-0
Ammonium tartrate		5000			14307-43-8
Ammonium tartrate		5000			3164-29-2
Ammonium thiocyanate		5000			1762-95-4
Ammonium vanadate		1000		P119	7803-55-6
Amphetamine	1000				300-62-9
Amyl acetate		5000			628-63-7
Analine,2,4,6-trimethyl-	500				88-05-1
Aniline	1000	5000	x	U012	62-53-3
Anthracene		5000	x		120-12-7
Antimony		5000	x		7440-36-0
Antimony pentachloride		1000			7647-18-9
Antimony pentafluoride	500				7783-70-2
Antimony potassium tartrate		100			28300-74-5
Antimony tribromide		1000			7789-61-9
Antimony trichloride		1000			10025-91-9
Antimony trifluoride		1000			7783-56-4
Antimony trioxide		1000			1309-64-4
Antimycin A	1000/10,000				1397-94-0

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Antu	500/10,000				86-88-4
Aroclor 1016		1			12674-11-2
Aroclor 1221		1			11104-28-2
Aroclor 1232		1			11141-16-5
Aroclor 1242		1			53469-21-9
Aroclor 1248		1			12672-29-6
Aroclor 1254		1			11097-69-1
Aroclor 1260		1			11096-82-5
Arsenic		1	x		7440-38-2
Arsenic acid		1		P010	1327-52-2
Arsenic acid		1		P010	7778-39-4
Arsenic disulfide		1			1303-32-8
Arsenic pentoxide	100/10,000	1		P011	1303-28-2
Arsenic trisulfide		1			1303-33-9
Arsenic trioxide	100/10,000	1		P012	1327-53-3
Arsenous trichloride	500	1			7784-34-1
Arsine	100				7784-42-1
Arsine, diethyl-		1		P038	692-42-2
Asbestos		1	x		1332-21-4
Azaserine		1		U015	115-02-6
Azinophos-ethyl	100/10,000				2642-71-9
Azinophos-methyl	10/10,000				86-50-0
Barium and compounds			x		7440-39-3
Barium cyanide		10		P013	542-62-1
Benzal chloride	500	5000	x	U017	98-87-3
Benzamide			x		55-21-0
Benz[a]anthracene		10		U018	56-55-3
Benzanthracene,7,12-dime- thyl-		1		U094	57-97-6

(continued)



### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Benz[c]acridine	500	100	x	U016	225-51-4
Benzenamine,2-methyl 5-nitro-		100		U181	99-55-8
Benzenamine,2-methyl, hydro- chloride		100		U222	636-21-5
Benzenamine,3-(trifluoro- methyl)-					98-16-8
Benzenamine-4-chloro		1000		P024	106-47-8
Benzenamine,4-chloro-2- methyl-hydrochloride		100		U049	3165-93-3
Benzenamine, 4-methyl		100		U353	106-49-0
Benzenamine,4-nitro-		5000		P077	100-01-6
Benzenamine 4,4'-methyle- nebis-2-chloro		10		U158	101-14-4
Benzenamine,NN-dimethyl-4- phenylazo		10		U093	60-11-7
Benzene	500/10,000	10	x	U019	71-43-2
Benzene,1-bromo-4-phenoxy-		100		U030	101-55-3
Benzene,1-(chloromethyl)-4- nitro-					100-14-1
Benzene,1-methyl-2,4-dinitro-		10	x	U105	121-14-2
Benzene,1-methylethyl- (Cumene)		5000	x	U055	98-82-8
Benzene,1,2-dichloro		100	x	U070	95-50-1
Benzene,1,2,4,5-tetrachloro-		5000		U207	95-94-3
Benzene,1,3-dichloro		100	x	U071	541-73-1
Benzene,1,3-diisocy-anatome- thyl		100	x	U223	26471-62-5
Benzene,1,3,5-trinitro-		10		U234	99-35-4
Benzene,1,4-dichloro		100	x	U072	106-46-7
Benzene,2-methyl-1,3-dinitro-		100	x	U106	606-20-2
Benzene, chloro-		100	x	U037	108-90-7
Benzene, dimethyl-		1000	x	U239	1330-20-7

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Benzene, hexachloro-		10	x	U127	118-74-1
Benzene, hexahydro- (cyclo- hexane)		1000	x	U056	110-82-7
Benzene, m-dimethyl-		1000	x		108-38-3
Benzene, methyl-(toulene)		1000	x	U220	108-88-3
Benzene, o-dimethyl-		1000	x		95-47-6
Benzene, p-dimethyl-		1000	x		106-42-3
Benzene, pentachloro-		10		U183	608-93-5
Benzene, pentachloronitro-		100	x	U185	82-68-8
Benzene, arsonic acid	10/10,000				98-05-5
Benzene, sulfonyl chloride		100		U020	98-09-9
Benidine		1	x	U021	92-87-5
Benzimidazole, 4,5-dichloro-2- (trifluoromethyl)	500/10,000				3615-21-2
Benz[j]aceanthrylene, 1,2- dihydro-3-methyl-		10		U157	56-49-5
Benzoic acid		5000			65-85-0
Benzo[a]pyrene		1		U022	50-32-8
Benzo[b]fluoranthene		1			205-99-2
Benzo[ghi]perylene		5000			191-24-2
Benzoic acid		5000			65-85-0
Benzo[jk]fluorene		100		U120	206-44-0
Benzo[k]fluoranthene		5000			207-08-9
Benzonitrile		5000			100-47-0
Benzotrichloride	500	10	x	U023	98-07-7
Benzoyl chloride		1000	x		98-88-4
Benzoyl peroxide			x		94-36-0
Benzyl chloride	500	100	x	P028	100-44-7
Benzyl cyanide	500				140-29-4
Beryllium chloride		1			7787-47-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Beryllium fluoride		1			7787-49-7
Beryllium nitrate		1			13597-99-4
Beryllium nitrate		1			7787-55-5
Beryllium		10	x	P015	7440-41-7
beta-Endosulfan		1			33213-65-9
beta-BHC		1			319-85-7
beta-Chloronaphthalene		5000		U047	91-58-7
Bicyclo[2.2.1]heptane-2-carbo- nitrile, 5-chloro-6-(methyl)	500/10,000				15271-41-7
Biphenyl			x		92-52-4
Bis(2-chloroethoxy) methane		1000	x	U024	111-91-1
Bis(2-chloroisopropyl) ether		1000	x	U027	108-60-1
Bis(2-ethylhexyl)adipate			x		103-23-1
Bis(chloromethyl)ketone	10/10,000				534-07-6
Bitoscanate	500/10,000				4044-65-9
Boron trichloride	500				10294-34-5
Boron trifluoride compound with methyl ether (1:1)	1000				353-42-4
Boron trifluoride	500				7637-07-2
Bromadiolone	100/10,000				18772-56-7
Bromine	500				7726-95-6
Bromoacetone		1000		P017	598-31-2
Bromochlorodifluoromethan (Halon 1211)			x		353-59-3
Bromoform		100	x	U225	75-25-2
Bromotrifluorometh-ane (Halon 1311)			x		75-63-8
Brucine		100		P018	357-57-3
Butanoic acid,4-[bis(2-chloro- ethyl)amino] benzene-		10		U035	305-03-3
Butyl benzyl Phthalate		100	x		85-68-7

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Butyl acetate		5000			123-86-4
Butyl acrylate			x		141-32-2
Butylamine		1000			109-73-9
Butyraldehyde			x		123-72-8
Butyric acid		5000			107-92-6
CI Acid Green 3			x		4680-78-8
CI Basic Green 4			x		569-64-2
CI Basic Red 1			x		989-38-8
CI Direct Black 38			x		1937-37-7
CI Direct Blue 6			x		2602-46-2
CI Direct Brown 95			x		16071-86-6
CI Disperse Yellow 3			x		2832-40-8
CI Food Red 15			x		81-88-9
CI Food Red 5			x		3761-53-3
CI Solvent Orange 7			x		3118-97-6
CI Solvent Yellow 14			x		824-07-0
CI Solvent Yellow 34 (Auramine)		100	x	U014	492-80-8
CI Solvent Yellow 3			x		97-56-3
CI Vat Yellow 4			x		128-66-5
Cacodylic acid		1		U136	75-60-5
Cadmium		10	x		7440-43-9
Cadmium acetate		10			543-90-8
Cadmium bromide		10			7789-42-6
Cadmium chloride		10			10108-64-2
Cadmium oxide	100/10,000				1306-19-0
Cadmium stearate	1000/10,000				2223-93-0
Calcium arsenate	500/10,000	1			7778-44-1
Calcium arsenite		1			52740-16-6

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Calcium carbide		10			75-20-7
Calcium chromate		10		U032	13765-19-0
Calcium cyanamide			x		156-62-7
Calcium cyanide		10		P021	592-01-8
Calcium dodecylbenzene sul- fonate		1000			26264-06-2
Calcium hypochlorite		10			7778-54-3
Cantharidin	100/10,000				56-25-7
Captan		10	x		133-06-2
Carbachol chloride	500/10,000				51-83-2
Carbamic acid, ethyl ester		100	x	U238	51-79-6
Carbamic acid, methyl-nitroso- ethyl ester		1		U178	615-53-2
Carbamic acid, methyl-o- (((2,4-dimethyl-1,3-dithiolan- 2-y	100/10,000				26419-73-8
Carbamic chloride,		1	x	U097	79-44-7
Carbaryl		100	x		63-25-2
Carbofuran	10/10,000	10			1563-66-2
Carbon disulfide	10,000	100	x	P022	75-15-0
Carbon oxyfluoride		1000		U033	353-50-4
Carbon tetrachloride		10	x	U211	56-23-5
Carbonyl sulfide			x		463-58-1
Carbophenothion	500			786-19-6	
Catechol			x		120-80-9
Chloramben			x		133-90-4
Chlordane	1000	1	x	U036	57-74-9
Chlorfenvinfos	500				470-90-6
Chlorinated fluorocarbon (Freon 113)			x		76-13-1
Chlorine	100	10	x		7782-50-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Chlorine cyanide		10		P033	506-77-4
Chlorine dioxide			x		10049-04-4
Chlormephos	500				24934-91-6
Chlormequat chloride	100/10,000				999-81-5
Chlornaphazine		100		U026	494-03-1
Chloroacetaldehyde		1000	P023		107-20-0
Chloroacetic acid	100/10,000		x		79-11-8
Chlorobenzilate		10	x	U038	510-15-6
Chlorodibromomethane		100			124-48-1
Chlorodifluoromethane (HCFC-22)			x		75-45-6
Chloroethane		100	x		75-00-3
Chloroethanol	500				107-07-3
Chloroethyl chloroformate	1000				627-11-2
Chloroform	10,000	10	x	U044	67-66-3
Chloromethyl methyl ether	100	10	x	U046	107-30-2
Chlorophacinone	100/10,000				3691-35-8
Chloroprene			x		126-99-8
Chlorotetrafluoroethane			x		63938-10-3
Chlorothalonil			x		1897-45-6
Chloroxuron	500/10,000				1982-47-4
Chlorpyrifos		1			2921-88-2
Chlorsulfonic acid		1000			7790-94-5
Chlorthiophos	500				21923-23-9
Chromic acetate		1000			1066-30-4
Chromic acid		10			11115-74-5
Chromic acid		10			7738-94-5
Chromic chloride	1/10,000				10025-73-7
Chromic sulfate		1000			10101-53-8

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Chromium		5000	x		7440-47-3
Chromous chloride		1000			10049-05-5
Cobalt			x		7440-50-8
Cobalt,((2,2'-1,2-ethanediyl- bis (nitrilomethylidyne)) bis(6)	100/10,000				62207-76-5
Cobalt carbonyl	10/10,000				10210-68-1
Cobaltous bromide		1000			7789-43-7
Cobaltous formate		1000			544-18-3
Cobaltous sulfamate		1000			14017-41-5
Colchicine	10/10,000				64-86-8
Copper		5000	x		7440-50-8
Copper cyanide		10		P029	544-92-3
Coumaphos	100/10,000	10			56-72-4
Coumatetralyl	500/10,000				5836-29-3
Cresol(s) (mixed isomers)		1000	x	U052	1319-77-3
Cresol,o-	1000/10,000	1000	x	U052	95-48-7
Creosote		1	x	U051	8001-58-9
Crimidine	100/10,000				535-89-7
Crotonaldehyde,(E)-	1000	100		U053	123-73-9
Crotonaldehyde	1000	100		U053	4170-30-3
Cumene hydroperoxide			x		80-15-9
Cupferron			x		135-20-6
Cupric acetate		100			142-71-2
Cupric chloride		10			7447-39-4
Cupric nitrate		100			3251-23-8
Cupric oxalate		100			5893-66-3
Cupric sulfate		10			7758-98-7

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Cupric sulfate ammoniated		100			10380-29-7
Cupric tartrate		100			815-82-7
Cyanides (soluble cyanide salts)		10		P030	57-12-5
Cyanogen		100		P031	460-19-5
Cyanogen bromide	500/10,000	1000		U246	506-68-3
Cyanogen iodide	1000/10,000				506-78-5
Cyanophos	1000				2636-26-2
Cyanuric fluoride	100				675-14-9
Cyclohexanone		5000		U057	108-94-1
Cycloheximide	100/10,000				66-81-9
Cyclohexylamine	10,000				108-91-8
Cyclophosphamide		10		U058	50-18-0
D-Glucopyranose,2-deoxy-2-(3-methyl-3-nitrosoureido)-		1		U206	18883-66-4
Daunomycin		10		U059	20830-81-3
DDD		1		U060	72-54-8
DDE		1			72-55-9
DDT		1		U061	50-29-3
Decaborane(14)	500/10,000				17702-41-9
Decabromodiphenyl oxide			x		1163-19-5
Delta-BHC		1			319-86-8
Demeton	500				8065-48-3
Demeton-S-methyl	500				919-86-8
Di-(2-ethylhexyl)phthalate (DEHP)			x		177-81-7
Di-n-octyl phthalate		5000	x	U107	117-84-0
Di-n-propylnitrosamine (N-Nitrosodi-n-propylamine)		10	x	U111	621-64-7
Dialifor	100/10,000				10311-84-9

(continued)



# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Diallate		100	x	U062	2303-16-4
Diaminotoluene (mixed isomers)		10	x	U221	25376-45-8
Diaminotoluene (mixed isomers)		10			496-72-0
Diazinon		1			333-41-5
Diazomethane			x		334-88-3
Dibenz(a)lpyrene		10		U064	189-55-9
Dibenz[a,h] anthracene		1		U063	53-70-3
Dibenzofuran			x		132-64-9
Diborane	100				19287-45-7
Dibromotetrafluor-ethane (Halon 2402)			x		124-73-2
Dibutyl phthalate		10	x	U069	84-74-2
Dicamba		1000			1918-00-9
Dichlone		1			117-80-6
Dichloro-1,1,2-trifluoroethane			x		90454-18-5
Dichlorobenzene (mixed iso- mers)		100	x		25321-22-6
Dichlorobromomethane		5000	x		75-27-4
Dichlorodifluoromethane (CFC-12)		5000	x	U075	75-71-8
Dichloroethyl ether	10,000	10	x	U025	111-44-4
Dichloromethyl ether	100	10	x	P016	542-88-1
Dichloromethyl- phenylsilane	1000				149-74-6
Dichloropropane		1000			26638-19-7
Dichloropropane- Dichloropropene (mixture		100			8003-19-8
Dichloropropene		100			26952-23-8

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Dichlorotetrafluoro- ethane (CFC-114)			x		76-14-2
Dichlorotrifluoroethane			x		34077-87-7
Dichlorvos	1000	10	x		62-73-7
Dicholobenil		100			1194-65-6
Dicofol			x		115-32-2
Dicrotophos	100				141-66-2
Dieldrin		1		P037	60-57-1
Diepoxybutane	500	10	x	U085	1464-53-5
Diethanolamine			x		111-42-2
Diethyl chlorophosphate	500				814-49-3
Diethyl-p-nitrophenyl phosphate		100		P041	311-45-5
Diethyl sulfate			x		64-67-5
Diethylamine		100			109-89-7
Diethylcarbamazine citrate	100/10,000				1642-54-2
Diethylstilbestrol		1		U089	56-53-1
Digitoxin	100/10,000				71-63-6
Diglycidyl ether	1000				2238-07-5
Digoxin	10/10,000				20830-75-5
Dihydrosafrole			x		94-58-6
Diisopropylfluorophosphate	100	100		P043	55-91-4
Dimefox	500				115-26-4
Dimethoate	500/10,000	10		P044	60-51-5
Dimethyl-p-phenyl- enediamine	10/10,000				99-98-9
Dimethyl phosphoro- chloridothioate	500				2524-03-0
Dimethyl phthalate		5000	x	U102	131-11-3

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Dimethyl sulfate	500	100	x	U103	77-78-1
Dimethylamine		1000		U092	124-40-3
Dimethyldichlorosilane	500				75-78-5
Dimethylhydrazine	1000	10	x	U098	57-14-7
Dimetilan	500/10,000				644-64-4
Dinitrobenzene (mixed)		100			25154-54-5
Dinitrophenol		10			25550-58-7
Dinitrotoulene	10/10,000	10	x	P047	534-52-1
Dinitrotoluene (mixed isomers)		10	x		25321-14-6
Dinoseb	100/10,000	1000		P020	88-85-7
Dinoterb	500/10,000				1420-07-1
Dioxathion	500				78-34-2
Diphacinone	10/10,000				82-66-6
Diphosphoramidate, octamethyl-	100	100		P085	152-16-9
Dipropylamine		5000		U110	142-84-7
Diquat		1000			85-00-7
Diquat		1000			2764-72-9
Disulfoton	500	1		P039	298-04-4
Dithiazine iodide	500/10,000				514-73-8
Dithiobiuret	100/10,000	100		P049	541-53-7
Diuron		100			330-54-1
Dodecylbenzenesulf- onic acid		1000			27176-87-0
Emetine, dihydrochloride	1/10,000				16-42-7
Endosulfan	10/10,000	1		P050	115-29-7
Endosulfan sulfate		1			1031-07-8
Endothall		1000		P088	145-73-3
Endothion	500/10,000				2778-04-3

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Endrin	500/10,000	1		P051	72-20-8
Endrin aldehyde		1			7421-93-4
Epichlorohydrin	1000	100	x	U041	106-89-8
EPN	100/10,000				2104-64-5
Ergocalciferol	1000/10,000				50-14-6
Ergotamine tartrate	500/10,000				379-79-3
Ethanamine,N-ethyl-N-nitroso-		1	x	U174	55-18-5
Ethane,1,1-oxybis-		100		U117	60-29-7
Ethane,1,2-dibromo-		1	x	U067	106-93-4
Ethane,1,1,2-trichloro		100	x	U227	79-00-5
Ethane,1,1,1,2-tetrachloro		100		U208	630-20-6
Ethane,1,1,2,2-tetrachloro		100	x	U209	79-34-5
Ethane, hexachloro		100	x	U131	67-72-1
Ethanesulfonyl chloride, 2-chloro	500				1622-32-8
Ethanethioamide		10	x	U218	62-55-5
Ethanol,1,2-dichloro-acetate	1000				10140-87-1
Ethanol,2,2'-(nitroso imino) bis-		1		U173	1116-54-7
Ethene, tetrachloro		100	x	U210	127-18-4
Ethene, chloro-		1	x	U043	75-01-4
Ethion	1000	10			563-12-2
Ethoprophos	1000				13194-48-4
Ethyl acrylate		1000	x	U113	140-88-5
Ethyl chloroformate			x		541-41-3
Ethyl methacrylate		1000		U118	97-63-2
Ethyl methanesulfonate		1		U119	62-50-0
Ethylbenzene		1000	x		100-41-4
Ethylbis(2-chloro-ethyl) amine	500				538-07-8

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Ethylene			x		74-85-1
Ethylene glycol			x		107-21-1
Ethylene oxide	1000	10	x	U115	75-21-8
Ethylene thiourea		10	x	U116	96-45-7
Ethylenebisdithiocarbamic- acid, salts & esters		5000		U114	111-54-6
Ethylenediamine	10,000	5000			107-15-3
Ethylenediamine tetra-acetic acid (EDTA)		5000			60-00-4
Ethyleneimine	500	1	x	P054	151-56-4
Ethylenethiocyanate	10,000				542-90-5
Ethylidene dichloride			x		75-34-3
Famphur		1000		P097	52-85-7
Fenamiphos	10/10,000				22224-92-6
Fenitrothion	500				122-14-5
Fensulfothion	500				115-90-2
Ferric ammonium citrate		1000			1185-57-5
Ferric ammonium oxalate		1000			2944-67-4
Ferric ammonium oxalate		1000			55488-87-4
Ferric chloride		1000			7705-08-0
Ferric fluoride		100			7783-50-8
Ferric nitrate		1000			10421-48-4
Ferric sulfate		1000			10028-22-5
Ferrous ammonium sulfate		1000			10045-89-3
Ferrous chloride		100			7758-94-3
Ferrous sulfate		1000			7720-78-7
Ferrous sulfate		1000			7782-63-0
Florouracil	500/10,000				51-21-8
Fluometil	100/10,000				4301-50-2
Fluometuron			x		2164-17-2

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Fluorene		5000			86-73-7
Fluorine	500	10		P056	7782-41-4
Fluoroacetamide	100/10,000	100		P057	640-19-7
Fluoroacetic acid	10/10,000				144-49-0
Fluoroacetyl chloride	10				359-06-8
Fonofos	500				944-22-9
Formaldehyde	500	100	x	U122	50-00-0
Formaldehyde cyanohydrin	1000				107-16-4
Formetanate hydrochloride	500/10,000				23422-53-9
Formic acid		5000	x	U123	64-18-6
Formothion	100				2540-82-1
Formparanate	100/10,000				17702-57-7
Fosthietan	500				21548-32-3
Fuberidazole	100/10,000				3878-19-1
Fulminic acid, mercur- ry(II) salt		10		P065	628-86-4
Fumaric acid		5000			110-17-8
Furan	500	100		U124	110-00-9
Furan, tetrahydro-		1000		U213	109-99-9
Gallium trichloride	500/10,000				13450-90-3
Glycidylaldehyde		10		U126	765-33-4
Guanidine,N-nitroso-N methyl- N'-nitro		10		U163	70-25-7
Heptachlor		1	x	P059	76-44-8
Heptachlor epoxide		1			1024-57-3
Hexachloro-1,3-butadiene		1	x	U128	87-68-3
Hexachlorocyclopentadiene	100	10	x	U130	77-47-4
Hexachloronaphthalene			x		1335-87-1
Hexachlorophene		100	x	U132	70-30-4

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Hexachloropropene		1000		U234	1888-71-7
Hexaethyl tetraphosphate		100		P062	757-58-4
Hexamethylenediamine, N, N'- dibutyl-	500				4835-11-4
Hexamethylphosphoramide			x		680-31-9
Hydrazine	1000	1	x	U133	302-01-2
Hydrazine sulfate			x		10034-93-2
Hydrochloric acid (Hydrogen chloride (gas only))***	500	5000	x		7647-01-0
Hydrocyanic acid	100	10	x	P063	74-90-8
Hydrogen fluoride	100	100	x	U134	7664-39-3
Hydrogen peroxide (conc > 52%)	1000				7722-84-1
Hydrogen selenide	10				7783-07-5
Hydrogen sulfide	500	100	x	U135	7783-06-4
Hydroquinone	500/10,000		x		123-31-9
Indeno(1,2,3-cd) pyrene		100		U137	193-39-5
Iron, pentacarbonyl-	100				13463-40-06
iso-Amyl acetate		5000			123-92-2
iso-Butyl acetate		5000			110-19-0
iso-Butylamine		1000			78-81-9
iso-Butyric acid		5000			79-31-2
Isobenzan	100/10,000				297-78-9
Isobutyl alcohol		5000		U140	78-83-1
Isobutyraldehyde			x		78-84-2
Isobutyronitrile	1000				78-82-0
Isocyanic acid, 3,4-dichloro- phenyl ester	500/10,000				102-36-3
Isodrin	100/10,000	1		P060	465-73-6
Isophorone		5000			78-59-1
Isophorone diisocyanate	100				4098-71-9

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Isoprene		100			78-79-5
Isopropanolamine dode- cylbenzene sulfonate		1000			42504-46-1
Isopropyl alcohol (mfg- strong acid processes)			x		67-63-0
Isopropyl chloroformate	1000				108-23-6
Isopropylmethylpyrazolyl dimethylcarbamate	500				119-38-0
Kepone		1		U142	143-50-0
Lactonitrile	1000				78-97-7
Lasiocarpine		10		U143	303-34-4
Lead		10	x		7439-92-1
Lead arsenate		1			10102-48-4
Lead arsenate		1			7645-25-2
Lead arsenate		1			7784-40-9
Lead chloride		10			7758-95-4
Lead fluoborate		10			13814-96-5
Lead fluoride		10			7783-46-2
Lead iodide		10			10101-63-0
Lead nitrate		10			10099-74-8
Lead phosphate		10		U145	7446-27-7
Lead stearate		10			1072-35-1
Lead stearate		10			52652-59-2
Lead stearate		10			7428-48-0
Lead stearate		10			56189-09-4
Lead subacetate		10		U146	1335-32-6
Lead sulfate		10			15739-80-7
Lead sulfate		10			7446-14-2
Lead sulfide		10			1314-87-0

(continued)



### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Lead thiocyanate		10			592-87-0
Leptophos	500/10,000				21609-90-5
Lewisite	10				541-25-3
Lindane	1000/10,000	1	x	U129	58-89-9
Lithium chromate		10			14307-35-8
Lithium hydride	100				7580-67-8
m-Cresol		1000	x	U052	108-39-4
m-Nitrophenol		100			554-84-7
m-Nitrotoluene		1000			99-08-1
Malathion		100			121-75-5
Maleic acid		5000			110-16-7
Maleic, hydrazide		5000		U148	123-33-1
Malononitrile	500/10,000	1000	x	U149	109-77-3
Maneb			x		12427-38-2
Manganese			x		7439-96-5
Manganese, tricarbonyl methylcyclopentadienyl	100				12108-13-3
Mechlorethamine	10		x		51-75-2
Melphalan		1		U150	148-82-3
Mephosfolan	500				950-10-7
Mercuric acetate	500/10,000				1600-27-7
Mercuric chloride	500/10,000				7487-94-7
Mercuric cyanide		1			592-04-1
Mercuric nitrate		10			10045-94-0
Mercuric oxide	500/10,000				21908-53-2
Mercuric sulfate		10			7783-35-9
Mercuric thiocyanate		10			592-85-8
Mercurous nitrate		10			7782-86-7
Mercurous nitrate		10			10415-75-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Mercury		1	x	U151	7439-97-6
Methacrolein diacetate	1000				10476-95-6
Methacrylic anhydride	500				760-93-0
Methacryloyl chloride	100				920-46-7
Methacryloyloxyethyl isocyanate	100				30674-80-7
Methacrylonitrile	500	1000	x	U152	126-98-7
Methamidophos	100/10,000				10265-92-6
Methane, chloro		100	x	U045	74-87-3
Methane, dibromo-		1000	x	U068	74-95-3
Methane, dichloro-		1000	x	U080	75-09-2
Methane, iodide-		100	x	U138	74-88-4
Methane, trichlorofluoro- (CFC-11)		5000		U121	75-69-4
Methanesulfanyl chloride, trichloro	500	100		P118	594-42-3
Methanesulfonyl fluoride	1000				558-25-8
Methanol		5000	x	U154	67-56-1
Methapyrilene		5000		U155	91-80-5
Methidathion	500/10,000				950-37-8
Methiocarb	500/10,000	10			2032-65-7
Methomyl	500/10,000	100		P066	16752-77-5
Methoxychlor		1	x		72-43-5
Methoxyethylmercuric acetate	500/10,000				151-38-2
Methyl 2-chloroacrylate	500				80-63-7
Methyl acrylate			x		96-33-3
Methyl bromide	1000	1000	x	U029	74-83-9
Methyl chlorocarbonate			x		79-22-1

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Methyl chloroformate (Methylchlorocarbonate)	500	1000		U156	79-22-1
Methyl chloroform		1000	x	U226	71-55-6
Methyl hydrazine		10	x	P068	60-34-4
Methyl isobutyl ketone		5000	x	U161	108-10-1
Methyl isocyanate	500	10	x	P064	624-83-9
Methyl isothiocyanate	500				556-61-1
Methyl mercaptan	500	100	x	U153	74-93-1
Methyl methacrylate		1000	x	U162	80-62-6
Methyl phenkapton	500				3735-23-7
Methyl phosphonic dichloride	100				676-97-1
Methyl tert-butyl ether			x		1634-04-4
Methyl thiocyanate	10,000				556-64-9
Methyl vinyl ketone	10				78-94-4
Methylene-bis-(phenyliso- cyanate)(MBI)			x		101-68-8
Methylmercuric dicy- anamide	500/10,000				502-39-6
Methylthiouracil		10		U164	56-04-2
Methyltrichlorosilane	500				75-79-6
Metolcarb	100/10,000				1129-41-5
Mevinphos	500	10			7786-34-7
Mexacarbate	500/10,000	1000			315-18-4
Michler's ketone			x		90-94-8
Mitomycin C	500/10,000	10		U010	50-07-7
Molybdenum trioxide			x		1313-27-5
Monocrotophos	10/10,000				6923-22-4

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
(Mono) chloropentafluoroethane (CFC 115)			x		76-15-3
Monoethylamine		100			75-04-7
Monomethylamine		100			74-89-5
Muscimol	500/10,000	1000		P007	2763-96-4
Mustard gas	500		x		505-60-2
n-Butyl alcohol			x		71-36-3
N,N'-Dimethylaniline			x		121-69-7
N,N'-Diethylhydrazine		10		U086	1615-80-1
N-Nitroso-N-ethylurea		1	x		759-73-9
N-Nitroso-N-methylurea		1	x		684-93-5
N-Nitrosodiphenylamine		100	x		86-30-6
N-Nitrosomethylvinylamine		10	x		4549-40-0
N-Nitrosomorpholine			x		59-89-2
N-Nitrosornicotine			x		16543-55-8
N-Nitrosopiperidine		10	x	U179	100-75-4
N-Nitrosopyrrolidine		1		U180	930-55-2
Naled		10			300-76-5
Naphthalene		100	x	U165	91-20-3
Naphthenic acid		100			1338-24-5
Nickel		100	x		7440-02-0
Nickel ammonium sulfate		100			15699-18-0
Nickel carbonyl	1	10		P073	13463-39-3
Nickel chloride		100			37211-05-5
Nickel chloride		100			7718-54-9
Nickel cyanide		10		P074	557-19-7
Nickel hydroxide		10			12054-48-7
Nickel nitrate		100			14216-75-2
Nickel sulfate		100			7786-81-4

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Nicotine	100	100		P075	54-11-5
Nicotine sulfate	100/10,000				65-30-5
Nitric acid	1000	1000	x		7697-37-2
Nitric oxide	100	10		P076	10102-43-9
Nitrilotriacetic acid			x		139-13-9
Nitrobenzene	10,000	1000	x	U169	98-95-3
Nitrocyclohexane	500				1122-60-7
Nitrofen			x		1836-75-5
Nitrogen dioxide	100	10		P078	10102-44-0
Nitrogen dioxide		10		P078	10544-72-6
Nitroglycerine		10	x	P081	55-63-0
Nitrophenol (mixed)		100			25154-55-6
Nitrosodimethylamine	1000	10	x	P082	62-75-9
Nitrotoluene		1000			1321-12-6
Norbormide	100/10,000				991-42-4
O,O-Diethyl S-methyl dithiophosphate		5000		U087	3288-58-2
o-Anisidine hydrochloride			x		134-29-2
o-Anisidine			x		90-04-0
o-Dinitrobenzene		100	x		528-29-0
o-Nitrophenol		100	x		88-75-5
o-Nitrotoluene		1000			88-72-2
o-Toluidine		100	x	U328	95-53-4
Octachloronaphthalene			x		2234-13-1
Osmium tetroxide		1000	x	P087	20816-12-0
Ouabain	100/10,000				630-60-4
Oxamyl	100/10,000				23135-22-0
Oxetane,3,3- bis(chloromethyl)-	500				78-71-7

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Oxydisulfoton	500				2497-07-6
Ozone	100				10028-15-6
p-Anisidine			x		104-94-9
p-Benzoquinone		10	x	U197	106-51-4
p-Cresidine			x		120-71-8
p-Cresol		1000	x	U052	106-44-5
p-Dinitrobenzene		100	x		100-25-4
p-Nitrophenol		100	x	U170	100-02-7
p-Nitrosodiphenylamine			x		156-10-5
p-Nitrotoluene		1000			99-99-0
p-Phenylenediamine			x		106-50-3
Paraformaldehyde		1000			30525-89-4
Paraldehyde		1000	x		123-63-7
Paraquat	10/10,000				1910-42-5
Paraquat methosulfate	10/10,000				2074-50-2
Parathion	100	10	x	P089	56-38-2
Parathion, methyl	100/10,000	100		P071	298-00-0
Paris green (Cuprie acetoarsenite)	500/10,000	1			12002-03-8
Pentaborane	500				19624-22-7
Pentachloroethane		10	x	U184	76-01-7
Pentachlorophenol		10	x	U242	87-86-5
Pentadecyclamine	100/10,000				2570-26-5
Peracetic acid	500		x		79-121-0
Phenanthrene		5000			85-01-8
Phenol	500/10,000	1000	x	U188	108-95-2
Phenol,2,2'-thiobis (4-chloro-6-methyl	100/10,000				4418-66-0
Phenol,2,3,4,6-tetrachloro		10		U212	58-90-2

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Phenol,2,4,5-trichloro		10	x	U230	95-95-4
Phenol,2,4,6-trichloro		10	x	U231	88-06-2
Phenol,3-(1-methylethyl), methylcarbamate	500/10,000				64-00-6
Phenoxarsine,10,10'-oxydi-	500/10,000				58-26-6
Phenyl dichloroarsine	500	1		P036	696-28-6
Phenylhydrazine hydro- chloride	1000/10,000				59-88-1
Phenylmercury acetate	500/10,000	100		P092	62-38-4
Phenylsilatrane	100/10,000				2097-19-0
Phenylthiourea	100/10,000	100		P093	103-85-5
Phorate	10	10		P094	298-02-2
Phosacetim	100/10,000				4104-14-7
Phosfolan	100/10,000				947-02-4
Phosgene	10	10	x	P095	75-44-5
Phosmet	10/10,000				732-11-6
Phosphamidon	100				13171-21-6
Phosphine	500	100		P096	7803-51-2
Phosphonothioic acid methyl-O-(4-nitrophe- nyl)O-phenyl ester	500				2665-30-7
Phosphonothioic acid, methyl-O-ethyl-O-(4- (methylthio)phenyl Ester	500				2703-13-1
Phosphonothioic acid, methyl-,s (2-(bis(1- methylethyl)amino Ethyl o-Ethyl Ester	100				50782-69-9
Phosphoric acid		5000	x		7664-38-2

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Phosphoric acid, dimethyl 4-(methylthio)phenyl ester	500				3254-63-5
Phosphorothioc acid O,O-diethyl, O-pyrazinyl ester	500	100		P040	297-97-2
Phosphorothioic acid,O,O- dimethyl-S-(2- methylthio)ethyl est	500				2587-90-8
Phosphorus	100	1	x		7723-14-0
Phosphorus oxychloride	500	1000			10025-87-3
Phosphorus pentachloride	500				10026-13-8
Phosphorus pentasulfide		100		U189	1314-80-3
Phosphorus pentoxide	10				1314-56-3
Phosphorus trichloride	1000	1000			7719-12-2
Physostigmine	100/10,000				57-47-6
Physostigmine, sali- cylate (1:1)	100/10,000				57-64-7
Picric acid			x		88-89-1
Picrotoxin	500/10,000				124-87-8
Piperidine	1000				110-89-4
Pirimifos-ethyl	1000				23505-41-1
Polychlorinated biphenyls (PCBs)		1	x		1336-36-3
Potassium arsenate		1			7784-41-0
Potassium arsenite	500/10,000	1			10124-50-2
Potassium bichromate		10			7778-50-9
Potassium chromate		10			7789-00-6
Potassium cyanide	100	10		P098	151-50-8
Potassium hydroxide		1000			1310-58-3

(continued)



### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Potassium permanganate		100			7722-64-7
Potassium silver cyanide	500	1		P099	506-61-6
Promecarb	500/10,000				2631-37-0
Pronamide			x		23950-58-5
Propargite		10			2312-35-8
Propargyl alcohol		1000		P102	107-19-7
Propargyl bromide	10				106-96-7
Propiolactone, beta-	500		x		57-57-8
Propionaldehyde			x		123-38-6
Propionic acid		5000			79-09-4
Propionic acid, 2-(2,4,5- trichlorophenoxy)-		100		U233	93-72-1
Propionic anhydride		5000			123-62-6
Propiophenone, 4'-amino-	100/10,000				70-69-9
Propenenitrile	500	10		P101	107-12-0
Propenenitrile, 3-chloro-	1000	1000		P027	542-76-7
Propoxur			x		114-26-1
Propyl chloroformate	500				109-61-5
Propylene (Propene)			x		115-07-1
Propylene oxide	10,000	100	x		75-56-9
Propyleneimine	10,000	1	x	P067	75-55-8
Prothoate	100/10,000				2275-18-5
Pyrene	1000/10,000	5000			129-00-0
Pyrethrins		1			121-21-1
Pyrethrins		1			121-29-9
Pyrethrins		1			8003-34-7
Pyridine		1000	x	U196	110-86-1
Pyridine, 2-methyl-5-vinyl-	500				140-76-1
Pyridine, 4-amino-	500/10,000	1000		P008	504-24-5

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Pyridine,4-nitro-1-oxide	500/10,000				1124-33-0
Pyriminil	100/10,000				53558-25-1
Quinoline		5000	x		91-22-5
Reserpine		5000		U200	50-55-5
Salcomine	500/10,000				14167-18-1
Sarin	10				107-44-8
sec-Amyl acetate		5000			626-38-0
sec-Butyl acetate		5000			105-46-4
sec-Butyl alcohol			x		78-92-2
sec-Butylamine		1000			13952-84-6
sec-Butylamine		1000			513-49-5
Selenium		100	x		7782-49-2
Selenium dioxide		10		U204	7446-08-4
Selenium disulfide		10		U205	7448-56-4
Selenium oxychloride	500				7791-23-3
Selenious acid	1000/10,000	10		U204	7783-00-8
Selenouree		1000		P103	630-10-4
Semicarbazide hydro- chloride	1000/10,000				563-41-7
Silane,(4-aminobutyl) diethoxymethyl-	1000				3037-72-7
Silver		1000	x		7440-22-4
Silver cyanide		1		P104	506-64-9
Silver nitrate		1			7761-88-8
Sodium		10			7440-23-5
Sodium arsenate	1000/10,000	1			7631-89-2
Sodium arsenite	500/10,000	1			7784-46-5
Sodium azide (Na(N3))	500	1000		P105	26628-22-8
Sodium bichromate		10			10588-01-9

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Sodium bifluoride		100			1333-83-1
Sodium bisulfite		5000			7631-90-5
Sodium cacodylate	100/10,000				124-65-2
Sodium chromate		10			7775-11-3
Sodium cyanide (Na(CN))	100	10		P106	143-33-9
Sodium dodecylbenzene sulfonate		1000			25155-30-0
Sodium fluoride		1000			7681-49-4
Sodium fluoroacetate	10/10,000	10		P058	62-74-8
Sodium hydrosulfide		5000			16721-80-5
Sodium hydroxide		1000			1310-73-2
Sodium hypochlorite		100			10022-70-5
Sodium hypochlorite		100			7681-52-9
Sodium methylate		1000			124-41-4
Sodium nitrite		100			7632-00-0
Sodium phosphate,dibasic		5000			10039-32-4
Sodium phosphate,dibasic		5000			10140-65-5
Sodium phosphate,dibasic		5000			7558-79-4
Sodium phosphate,tribasic		5000			10101-89-0
Sodium phosphate,tribasic		5000			10124-56-8
Sodium phosphate,tribasic		5000			10361-89-4
Sodium phosphate,tribasic		5000			7601-54-9
Sodium phosphate,tribasic		5000			7758-29-4
Sodium phosphate,tribasic		5000			7785-84-4
Sodium selenate	100/10,000				13410-01-0 Sodium
Sodium selenite	100/10,000	100			10102-18-8
Sodium selenite		100			7782-82-3
Sodium tellurite	500/10,000				10102-20-2

(continued)

# Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Strannane,acetoxo- triphenyl-	500/10,000				900-95-8
Strontium chromate		10			2
Strychnine	100/10,000	10		P108	57-1-3
Strychnine, sulfate	100/10,000				60-41-3
Styrene		1000	x		100-42-5
Styrene oxide			x		96-09-3
Sulfotep	500	100		P109	3689-24-5
Sulfoxide,3-chloropropyl octyl	500				3569-57-1
Sulfur dioxide	500				7446-09-5
Sulfur monochloride		1000			12771-08-3
Sulfur tetrafluoride	100				7783-60-0
Sulfur trioxide	100				7446-11-9
Sulfuric acid	1000	1000	x		7664-93-9
Sulfuric acid		1000			8014-95-7
Tabun	10				77-81-6
Tellurium	500/10,000				13494-80-9
Tellurium hexafluoride	100				7783-80-4
Tetraethyldithiopyr phosphate	100	10		P111	107-49-3
Terbufos	100				13071-79-9
tert-Amyl acetate		5000			625-16-1
tert-Butyl acetate		5000			540-88-5
tert-Butyl alcohol			x		75-65-0
tert-Butylamine		1000			75-64-9
Tetrachlorvinphos			x		961-11-5
Tetraethyllead	100	10		P110	78-00-2
Tetraethyltin	100				597-64-8

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Tetramethyl Lead	100				75-74-1
Tetranitromethane	500	10		P112	509-14-8
Thallic oxide		100		P113	1314-32-5
Thallium		1000	x		7440-28-0
Thallium(1) carbonate	100/10,000	100		U215	6533-73-9
Thallium (I)sulfate	100/10,000	100		P115	10031-59-1
Thallium(I)nitrate		100		U217	10102-45-1
Thallium(I)selenide		1000		P114	12039-52-0
Thalious chloride	100/10,000	100		U216	7791-73-9
Thalious malonate	100/10,000				2757-18-8
Thalious sulfate	100/10,000	100		P115	7446-18-6
Thiocarbazide	1000/10,000				2231-57-4
Thiofanox	100/10,000	100		P045	39196-18-4
Thiram		10	x	U244	137-26-8
Thiophenol	500	100		P014	108-98-5
Thiosemicarbazide	100/10,000	100		P116	79-19-6
Thiourea		10	x		62-56-6
Thiourea,(2-chlorophenyl)-	100/10,000	100		P026	5344-82-1
Thiourea,(2-methylphenyl)-	500/10,000				614-78-8
Thorium dioxide			x		1314-20-1
Titanium dioxide			x		13463-67-7
Titanium tetrachloride	100		x		7550-45-0
Toluene2,4-diisocyanate	500	100	x		584-84-9
Toluene2,6-diisocyanate	100	100	x		91-08-7
Toxaphene(Campheclor)		1	x	P123	8001-35-2
Trans 1,1-dichlorobutene	500				110-57-6
Triamiphos	500/10,000				1031-47-6
Triaziquone			x		68-76-8

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Triazofos	500				24017-47-8
Trichloroacetyl chloride	500				76-02-8
Trichloro(chloromethyl) silane	100				1558-25-4
Trichloro(dichlorophenyl) silane	500				27137-85-5
Trichloroethylene		100	x	U228	79-01-6
Trichloroethylsilane	500				115-21-9
Trichlorofon		100	x		52-68-6
Trichloronate	500				327-98-0
Trichlorophenol		10			25167-82-2
Trichlorophenylsilane	500				98-13-5
Triethanolamine dode- cylbenzene sulfonate		1000			27323-41-7
Triethoxysilane	500				998-30-1
Triethylamine		5000			121-44-8
Trifluralin			x		1582-09-8
Trimethylamine		100			75-50-3
Trimethylchlorosilane	1000				75-77-4
Trimethylolpropane phosphite	100/10,000				824-11-3
Trimethyltin chloride	500/10,000				1066-45-1
Triphenyltin chloride	500/10,000				639-58-7
Tris(2-chloroethyl)amine	100				555-77-1
Trypan blue		10	x	U236	72-57-1
Uracil,5-[bis(2- chloroethyl)amino]-		10		U237	66-75-1
Uranyl acetate		100			541-09-3
Uranyl nitrate		100			10102-06-4

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Uranyl nitrate		100			36478-76-9
Valinomycin	1000/10,000				2001-95-8
Vanadium(fume or dust)			x		7440-62-2
Vanadium pentoxide	100/10,000	1000		P120	1314-62-1
Vanadyl sulfate		1000			27774-13-6
Vinyl acetate	1000	5000	x		108-05-4
Vinyl bromide			x		593-60-2
Warfarin	500/10,000	100		P001	81-81-2
Warfarin sodium	100/10,000				129-06-6
Xylenol		1000			1300-71-6
Xylylene dichloride	100/10,000				28347-13-9
Zinc		1000	x		7440-66-6
Zinc acetate		1000			557-34-6
Zinc ammonium chloride		1000			52628-25-8
Zinc ammonium chloride		1000			14639-97-5
Zinc ammonium chloride		1000			14639-98-6
Zinc borate		1000			1332-07-6
Zinc bromide		1000			7699-45-8
Zinc carbonate		1000			3486-35-9
Zinc chloride		1000			7646-85-7
Zinc cyanide		10		P121	557-21-1
Zinc, dichloro(4,4-dimethyl-5(((methylamino)carbonyl)oxy) imino) Pentane-nitrile)-(T-4)	100/10,000				58270-08-9
Zinc fluoride		1000			7783-49-5
Zinc formate		1000			557-41-5
Zinc hydrosulfite		1000			7779-86-4
Zinc nitrate		1000			7779-88-6
Zinc phenolsulfonate		5000			127-82-2

(continued)

### Appendix 3-1 (continued)

Chemical Name	Extremely Haz Sub 40 CFR 355 (pounds)	Haz Sub RQ 40 CFR 302.4 (pounds)	Toxic Chemicals 40 CFR 372.65(a)	Haz Mat which are RCRA wastes	CAS No.
Zinc phosphide	500	100	x	P122	1314-84-7
Zinc silicofluoride		5000			16871-71-9
Zinc sulfate		1000			7733-02-0
Zineb					12122-67-7
Zirconium nitrate		5000			13746-89-9
Zirconium potassium fluoride		1000			16923-95-8
Zirconium sulfate		5000			14644-61-2
Zirconium tetrachloride		5000			10026-11-6



## Appendix 3-2

### Maximum Allowable Capacity of Containers And Portable Tanks (29 CFR 1910.106(d)(2), Table H-12)

Container Type	Flammable Liquids			Combustible Liquids	
	IA	IB	IC	II	III
Glass or approved plastic	1 pt [0.47 L]	1 qt [0.95 L]	1 gal [3.79 L]	1 gal [3.79 L]	1 gal [3.79 L]
Metal (other than DOT drums)	1 gal [3.79 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]
Safety cans	2 gal [7.57 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]	5 gal [18.93 L]
Metal drums (DOT specifications)	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]	60 gal [227.12 L]
Approved portable tanks	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]	660 gal [2498.37 L]



### Appendix 3-3

#### Storage in Inside Rooms (29 CFR 1910.106(d)(4), Table H-13)

Fire Protection Provided <sup>1</sup>	Fire Resistance (hours)	Maximum Size	Total Allowable Quantities (gal/ft <sup>2</sup> floor area) <sup>2</sup>
Yes	2	500 ft <sup>2</sup> [46.45 m <sup>2</sup> ]	10 [37.85 L]
No	2	500 ft <sup>2</sup> [46.45 m <sup>2</sup> ]	4 [15.14 L]
Yes	1	150 ft <sup>2</sup> [13.94 m <sup>2</sup> ]	5 [18.93 L]
No	1	150 ft <sup>2</sup> [13.94 m <sup>2</sup> ]	2 [7.57 L]

<sup>1</sup>Fire protection system will be sprinkler, water spray, or other approved method.

<sup>2</sup>If metric containers are being stored, use the nearest metric equivalent.



## Appendix 3-4

### Storage of Flammable/Combustible Materials 29 CFR 1910.106(d)(5) and 1910.106(d)(6), Tables H-14 through H-17)

#### Indoor Container Storage

Class	Liquid Storage Level	Protected Storage Maximum per Pile	Unprotected Storage Minimum per Pile
A	Ground and upper floors	2750 gal [10409.88 L] (50)	600 gal [2271.25 L] (12)
	Basement	Not permitted	Not permitted
B	Ground and upper floors	5500 gal [20819.77 L] (100)	1375 gal [5204.94 L] (25)
	Basement	Not permitted	Not permitted
C	Ground and upper floors	16,500 gal [62459.30 L] (300)	4125 gal [15614.82 L] (25)
	Basement	Not permitted	Not permitted
II	Ground and upper floors	16,500 gal [62459.30 L] (300)	4125 gal [15614.82 L] (75)
	Basement	5500 gal [20819.77 L] (100)	Not permitted
III	Ground and upper floors	55,000 gal [208197.66 L] (1000)	13,750 gal [52049.42 L] (250)
	Basement	8250 gal [31229.65 L] (450)	Not permitted

(NOTE: Numbers in parenthesis indicate corresponding number of 55 gal drums.)

(NOTE: Numbers in parentheses indicate corresponding number of 55-gal [208.20 L] drums.)

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft [3.66 m] from an aisle. Main aisles will be at least 8 ft [2.44 m] wide and side aisles at least 4 ft [1.22 m] wide.

NOTE 3: Each pile shall be separated from the others by at least 4 ft [1.22 m].

(continued)

## Appendix 3-4 (continued)

### Outdoor Container Storage

Class	Maximum per pile (gal) [L]	Distance between piles (ft) [m]	Distance to property line that can be built upon (ft) [m]	Distance to street, alley or public way (ft) [m]
IA	1100 [4163.95]	5 [1.52]	20 [6.10]	10 [3.05]
IB	2200 [8327.91]	5 [1.52]	20 [6.10]	10 [3.05]
IC	4400 [44003.79]	5 [1.52]	20 [6.10]	10 [3.05]
II	8800 [33311.63]	5 [1.52]	10 [3.05]	5 [1.52]
III	22,000 [83279.06]	5 [1.52]	10 [3.05]	5 [1.52]

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft [60.96 m] of each container, there will be a 12 ft [3.66 m] wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 3 will be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft [0.91 m].

(continued)

## Appendix 3-4 (continued)

### Indoor Portable Tank Storage

Class Liquid	Storage Level	Protected Storage Maximum per Pile (gal) [L]	Unprotected Storage Minimum per Pile (gal) [L]
IA	Ground and upper floors Basement	Not permitted Not permitted	Not permitted Not permitted
IB	Ground and upper floors Basement	20,000 [75708.24] Not permitted	2000 [7570.82] Not permitted
IC	Ground and upper floors Basement	40,000 [151420.48] Not permitted	5500 [20820.32] Not permitted
II	Ground and upper floors Basement	40,000 [151420.48] 20,000 [75708.24]	5500 [20820.32] Not permitted
III	Ground and upper floors Basement	60,000 [227124.72] 20,000 [75708.24]	22,000 [83279.06] Not permitted

NOTE 1: When one or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft [3.66 m] from an aisle. Main aisles will be at least 8 ft [2.44 m] wide and side aisles at least 4 ft [1.22 m] wide.

NOTE 3: Each pile shall be separated from each other by at least 4 ft [1.22 m].

(continued)

## Appendix 3-4 (continued)

### Outdoor Portable Tank Storage

Class	Maximum per pile (gal) [L]	Distance between piles (ft) [m]	Distance to property line that can be built upon (ft) [m]	Distance to street, alley public way (ft) [m]
IA	2200 [8327.95]	5 [1.52]	20 [6.10]	10 [3.05]
IB	4400 [44003.79]	5 [1.52]	20 [6.10]	10 [3.05]
IC	8800 [33311.63]	5 [1.52]	20 [6.10]	10 [3.05]
II	17,600 [66623.25]	5 [1.52]	10 [3.05]	5 [1.52]
III	44,000 [166558.12]	5 [1.52]	10 [3.05]	5 [1.52]

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft [60.96 m] of each container, there will be a 12 ft [3.66 m] wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 3 will be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft [0.91 m].



## Appendix 3-5

### Potentially Incompatible Hazardous Materials/Wastes

*(Law, Regulations, and Guidelines for Handling of Hazardous Waste, California Department of Health, February 1975  
(40 CFR 264, Appendix V))*

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes to avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequences as noted.

Group 1-A	Group 1-B
Acetylene sludge Alkaline caustic liquids Alkaline cleaner Alkaline corrosive liquids Alkaline corrosive battery acid Caustic wastewater Lime sludge and other corrosive alkalies Lime wastewater Lime and water Spent caustic	Acid sludge Acid and water Battery acid Chemical cleaners Electrolyte, acid Etching acid liquid or solvent Pickling liquor and other corrosive acids Spent acid Spent mixed acid Spent sulfuric acid

**Potential Consequences:** Heat generation, violent reaction.

Group 2-A	Group 2-B
Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides	Any waste in Group 1-A or 1-B

**Potential Consequences:** Fire or explosion, generation of flammable hydrogen gas.

(continued)

### Appendix 3-5 (continued)

Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO <sub>2</sub> , Cl <sub>2</sub> , SOCl <sub>2</sub> , PCl <sub>3</sub> , CH <sub>3</sub> , SiCl <sub>3</sub> Other water-reactive waste

**Potential Consequences:** Fire, explosion, or heat generation; generation of flammable or toxic gases.

Group 4-A	Group 4-b
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Concentrated Group 1-A or Group 1-B wastes Group 2-A wastes

**Potential Consequences:** Fire, explosion, or violent reaction.

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

**Potential Consequences:** Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

Group 6-A	Group 6-B
Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers	Acetic acid and other organic acids Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes

**Potential Consequences:** Fire, explosion, or violent reaction.

## Appendix 3-6

### Placarding Guidelines

The following table specifies placards that should be used for the transportation of ANY QUANTITY of the listed hazardous material.

Hazardous Materials	
<i>Classed or Described As</i>	<i>Placards</i>
Class A Explosives	EXPLOSIVES A
Class B Explosives	EXPLOSIVES B
Poison A	POISON GAS
Flammable Solid	FLAMMABLE SOLID

(NOTE: Any of the above substances that are dangerous when wet should also have the placard: DANGEROUS WHEN WET, in addition to their primary placard.)

The following table specifies placards that should be used for the transportation of 1000 lb or more of the listed hazardous materials.

Hazardous Materials	
<i>Classed or Described As</i>	<i>Placards</i>
Class C Explosives	FLAMMABLE
Nonflammable Gas	NONFLAMMABLE GAS
Nonflammable Gas (Chlorine)	CHLORINE
Nonflammable Gas (Fluorine)	POISON
Nonflammable Gas (Oxygen, pressurized liquid)	OXYGEN
Flammable Gas	FLAMMABLE GAS
Combustible Liquid	COMBUSTIBLE
Flammable Liquid	FLAMMABLE
Flammable Solid	FLAMMABLE SOLID
Oxidizer	OXIDIZER
Organic Peroxide	ORGANIC PEROXIDE
Poison B	POISON
Corrosive Material	CORROSIVE
Irritating Material	DANGEROUS

1. Placards should be affixed on both sides, rear and front, of the motor vehicle.
2. Place placards clear of ladders, pipes, and tarps.
3. Placards should be at least 3 in. away from advertising and markings.
4. The DANGEROUS placards may be used when a motor vehicle contains two or more classes of hazardous materials requiring different placards. The DANGEROUS placard may be used in place of the separate placards for each class.
5. Portable tanks having a rated capacity of 1000 gal or more must be placarded.
6. Cargo tanks having any quantity of hazardous material must be placarded.



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS MATERIALS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> <b>NA      C      RMA</b>	<b>REVIEWER CHECKS:</b>		

## **SECTION 4**

### **HAZARDOUS WASTE MANAGEMENT**

A. Applicability	1
B. Federal Legislation	1
C. State/Local Regulations	1
D. Key Compliance Requirements	2
E. Key Compliance Definitions	4
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**The contents of this section are the minimum requirements the assessor must review. The assessor must also review applicable state and local regulations.**

## **SECTION 4**

### **HAZARDOUS WASTE MANAGEMENT**

#### **A. Applicability**

This section applies to FWS facilities that generate, store, transport, treat, or dispose of any type of hazardous waste. Federal regulations establish different regulatory requirements based on the amount of hazardous waste generated.

This section and its associated evaluation checklists are more complex than other sections in this volume. Not all evaluation items will be applicable to a facility. Guidance is provided on the checklists to direct the evaluator to the regulations concerning the type of hazardous waste activities/facilities on the facility.

#### **B. Federal Legislation**

- *The Resource Conservation and Recovery Act (RCRA)*, Subtitle C. This law, Public Law (PL) 98-616 (42 U.S. Code (USC) 6921-6939b) establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. Specifically, RCRA prohibits the placement of bulk or noncontainerized liquid hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the land disposal of specified wastes and disposal of hazardous waste through underground injection within 1/4 mi [0.40 km] of an underground source of drinking water.
- *The Federal Facility Compliance Act (FFCA) of 1992*. This Act provides for a waiver of sovereign immunity with respect to Federal, state, and local procedural and substantive requirements relating to RCRA solid and hazardous waste laws and regulations. Additionally, it defines hazardous waste in relation to public vessels, expands the definition of mixed waste, addresses the issue of munitions, and discusses waste discharges to Federally owned treatment works (FOTWs).

#### **C. State/Local Regulations**

Many states have met the U.S. Environmental Protection Agency (USEPA) requirements in 40 CFR 271 and have been authorized to manage their own state programs. RCRA encourages states to develop their own hazardous waste statutes and to operate regulatory programs. Many states have adopted the USEPA regulations by reference or have promulgated regulations which are identical to the USEPA regulations, while other states have promulgated regulations stricter than the Federal RCRA. These differences between individual state regulations and the Federal program require that evaluators check the status of the state's authorization and then determine which regulations apply. Since the section checklists are based exclusively on the requirements of the Federal RCRA/USEPA program, it is necessary to determine in what ways the applicable state program differs from the RCRA/USEPA program.

#### **D. Key Compliance Requirements**

- Requirements for the Generations of Hazardous Waste - Responsibilities of FWS facilities are based on the amount of waste being generated in 1 mo. Typical wastes include solvents, paint, contaminated antifreeze or oil, and sludges. In some states, waste oil and other substances have been classified as a hazardous waste and therefore need to be included in the total amount of waste being generated. Within Federal regulations there are three classifications:
  1. A Conditionally Exempt Small Quantity Generator (CESQG) produces no more than 100 kg [220.46 lb] of hazardous waste or 1 kg [2.20 lb] of acutely hazardous waste in a 1 mo time period. They also do not accumulate onsite more than 1000 kg [2204.62 lb] of waste at any one time. When either the volume of waste produced in 1 mo exceeds 100 kg [220.46 lb] or more than 1000 kg [2204.62 lb] of waste has accumulated onsite, the facility is required to comply with the more stringent standards applicable to a Small Quantity Generator (SQG). A large percentage of FWS facilities fall into either the CESQG or the SQG classification.
  2. A SQG produces between 100 [220.46 lb] and 1000 kg [2204.62 lb] of hazardous waste in a month. The waste cannot accumulate onsite for more than 180 days unless the waste is transported more than 200 mi [321.87 km] to a treatment, storage, and disposal facility (TSDF). In that situation, the waste can accumulate for 270 days. But at no time is there to be more than 6000 kg [13,227.73 lb] of waste accumulated at the facility. When the volume of waste generated in 1 mo exceeds 1000 kg [2204.62 lb], the accumulation time onsite is exceeded, or more than 6000 kg [13,227.73 lb] of waste is onsite, the facility is required to comply with the standards for a Generator.
  3. A Generator produces more than 1000 kg [2204.62 lb] of hazardous waste in a month.

(NOTE: Using water, which weighs approximately 8 lb/gal [3.63 kg/gal] as a basis of measurement, 100 kg [220.46 lb] would equal about 28 gal [105.99 L] (one-half of a 55 gal [208.20 L] drum), 1000 kg [2204.62 lb] would equal about 273 gal [1036.15 L] (almost five, 55 gal [208.20 L] drums).)

Whether the facility is a CESQG, SQG, or a Generator determines the type of records the facility is required to keep and design standards for storage areas. Small storage areas connected with a generation points are often referred to as accumulation points.

Regardless of the amount of hazardous waste generated, every FWS facility is required to test or use prior knowledge of its solid waste to determine if it has hazardous characteristics. Every FWS facility is also required to store and/or accumulate hazardous waste in containers that are compatible with the waste, undamaged, and labeled to indicate the contents.



<b>Requirement</b>	<b>CESQG</b>	<b>SQG</b>	<b>Generator</b>
Identify HW	Yes	Yes	Yes
Quantity Limits	≤ 100 kg/mo [220.46 lb]	100 [220.46 lb] - 1000 kg/mo [2204.62 lb]	>1000 kg/mo [2204.62 lb/mo]
Acute Waste Limits	≤ 1 kg/mo [2.20 lb/mo]	None	None
Management of Waste	state approved or RCRA permitted	RCRA permitted facility	RCRA permitted facility
USEPA Identification Number	Not Required	Required	Required
RCRA Personnel Training	Not Required	Basic Training Required	Required
DOT Training	Required	Required	Required
Exception Report	Not Required	Required > 60 days	Required > 45 days
Biennial Report	Not Required	Not Required	Required
Onsite Accumulation Limits (without permit)	≤ 1000 kg [2204.62 lb]	≤ 6000kg [13,227.73 lb]	Any quantity
Accumulation Time Limits (without permit)	None	≤ 180 days or ≤ 270 days (>200 mi [321.87 km])	≤ 90 days + 30 days granted by USEPA
Storage Requirements	None	Basic requirements with technical standards for containers or tanks	Full compliance with management of containers or tanks
Use Manifests	Yes	Yes	Yes

- **Transport Requirements** - Containers of hazardous waste shipped offsite must be labeled to identify the waste and its hazard class.
- **Accumulation Point Management** - An accumulation point is an area in or near the workplace where hazardous waste is accumulated or stored before being turned in for disposal. Storage in these areas is temporary and the permissible length of time for accumulation depends on what size generator the facility is.
- **Satellite Accumulation Point Management** - A satellite accumulation point is an area where no more than 55 gal [208.20 L] of a hazardous waste or 1 qt [0.95 L] of acute hazardous waste is accumulated at or near the point of generation. The satellite accumulation point is under the control of one operator. When the 55 gal [208.20 L] limit is reached the operator has 3 days to move the waste to a 90 day storage area or a permitted TSDF. Only SQGs and Generators can use a satellite accumulation point.
- **Permitted TSDF Requirements** - The operation of a TSDF is subject to regulation and permitting under Federal and state regulations. These regulations are both administrative as well as technical in nature. The administrative standards require that various plans be

developed to ensure that emergencies can be dealt with, waste received is properly identified, and operating personnel are adequately trained to operate the facility and respond to emergencies. These administrative standards also include requirements that the facility be inspected routinely, records of operations are compiled and maintained, and reports of both routine and contingency operations are made to the applicable regulatory agency. The administrative standards also require that a plan for ceasing operations and closing the facility be developed, kept on-hand, and updated frequently.

The technical standards which are applicable to TSDFs fall into two classes: general standards which apply to all TSDFs and specific standards which apply to various types of facilities, i.e., container storage areas, tanks, containment buildings, surface impoundments, waste piles, land treatment facilities, incinerators, landfills, thermal treatment facilities, and chemical, physical, biological treatment facilities.

Administrative and technical facility standards are applied to a particular facility through a RCRA permit issued to a facility. Existing facilities which have applied for a permit but not yet been issued a RCRA permit are considered to be in interim status if they applied for a part A and part B permit and can continue to operate if they comply with the RCRA mandated Interim Status Standards (ISS) of 40 CFR 265 (Interim status standards for owners and operators of hazardous waste TSDF).

- **Ordnance** - Under the provisions of 40 CFR 261.23(a)(6) through 261.23(a)(8) ordnance is classified as a reactive hazardous waste. The open burning and open detonation (OB/OD) of waste explosives is allowed at interim status TSDFs as long as a minimum distance is kept from the property line of the property of others. The length of this distance is based on the amount of explosive being OB/OD. For permitted TSDFs, OB/OD activities are regulated by permit to operate a miscellaneous unit. This is often referred to as a Subpart X permit.
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **E. Key Compliance Definitions**

- **Aboveground Tank** - a device that meets the definition of a *tank* in 40 CFR 260.10 and that is situated in such a way that the entire surface area of the tank is completely above the plane of the adjacent surrounding surface and the entire surface area of the tank (including the tank bottom) is able to be visually inspected (40 CFR 260.10).
- **Active Life** - the period from the initial receipt of hazardous waste at the facility until the Regional Administrator receives certification of final closure (40 CFR 260.10).
- **Active Portion** - that portion of a facility where treatment, storage, or disposal operations are being or have been conducted and which is not a closed portion (40 CFR 260.10).
- **Acute Hazardous Waste** - any waste listed under 40 CFR 261.31 - 261.33(c) with a hazard code of H. These include USEPA Hazardous waste numbers: F020, F021, F022, F023, F026, and F027 (40 CFR 261.31 through 261.33).

- *Ancillary Equipment* - any device including, but not limited to piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal onsite, or to a point of shipment offsite (40 CFR 260.10).
- *Aquifer* - a geologic formation or group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs (40 CFR 260.10).
- *Boiler* - an enclosed device using controlled flame combustion and having the following characteristics (40 CFR 260.10):
  1. the unit has physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases
  2. the unit's combustion chamber and primary energy recovery section(s) must be of integral design
  3. while in operation the unit maintains a thermal energy recovery efficiency of at least 60 percent
  4. the unit has been approved by the Administrator.
- *Certification* - a statement of professional opinion based upon knowledge and belief (40 CFR 260.10).
- *Characteristics of Hazardous Waste* - the characteristics of ignitability, corrosivity, reactivity, and toxicity which identify hazardous waste (40 CFR 261.20 through 261.24).
- *Closed Portion* - the portion of a facility which has been closed in accordance with the approved closure plan and all applicable closure requirements (40 CFR 260.10).
- *Component* - refers to either the tank or the ancillary equipment of the tank system (40 CFR 260.10).
- *Consignee* - the ultimate treatment, storage, or disposal facility in a receiving country to which the hazardous waste will be sent (40 CFR 262.51).
- *Container* - any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 260.10).
- *Containment Building* - a hazardous waste management unit that is used to store or treat hazardous waste under 40 CFR 264.1100 through 264.1103 and 40 CFR 265.1100 through 1103 (40 CFR 260.10).
- *Contingency Plan* - a document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment (40 CFR 260.10).

- *Corrective Action Management Unit (CAMU)* - an area within a facility that is designated by the Regional Administrator under part 264 subpart S, for the purpose of implementing corrective action requirements under 264.101 and RCRA section 3008(h). A CAMU shall only be used for the management of remediation wastes pursuant to implementing such corrective action requirements at the facility (40 CFR 264.10).
- *Corrosion Expert* - a person who, by reason of knowledge of the physical sciences and the principles of engineering and mathematics, acquired by a professional education and related practical experiences is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification and licensing that includes education and experience in corrosion control and or buried or submerged metal piping systems or tanks (40 CFR 260.10).
- *Debris* - solid material exceeding a 60 mm particle size that is intended for disposal and that is: a manufactured object; or plant or animal matter; or natural geologic material. The following materials are not debris: any material for which a specific treatment standard is provided; process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emissions residues; and intact containers of hazardous waste that are not ruptured and retain at least 75 percent of their original volume (40 CFR 268.2).
- *Designated Facility* - a hazardous waste TSDF that is identified on a manifest as the destination of a hazardous waste shipment. The facility must have an appropriate permit, interim status, or be regulated under specific recycling requirements (40 CFR 260.10).
- *Detonation* - an explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 km/s at sea level) (40 CFR 265.382).
- *Dike* - an embankment or ridge of either natural or manmade materials used to prevent the movement of liquids, sludges, solids, or other materials (40 CFR 260.10).
- *Discharge or Hazardous Waste Discharge* - the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water (40 CFR 260.10).
- *Disposal* - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters (40 CFR 260.10).
- *Elementary Neutralization Unit* - a device used for neutralizing only those hazardous wastes that exhibit corrosivity (as defined in 40 CFR 261.22) or are listed in Subpart D of 40 CFR 261 only because of corrosivity and meet the definition of tank, tank system container, transport vehicle, or vessel in 40 CFR 261.10 (40 CFR 260.10).

- ***EPA Acknowledgement of Consent*** - the cable sent to the USEPA from the U.S. Embassy in a receiving country that acknowledges the written consent of the receiving country to accept the hazardous waste and describes the terms and conditions of the receiving country's consent to the shipment (40 CFR 262.51).
- ***EPA Hazardous Waste Number*** - the number assigned by USEPA to each hazardous waste listed in Part 261, Subpart D and to each characteristic identified in Part 261, Subpart C (40 CFR 260.10).
- ***EPA Identification Number*** - the number assigned by USEPA to each generator, transporter, and treatment, storage, or disposal facility (40 CFR 260.10).
- ***Existing Hazardous Waste Management (HWM) Facility or Existing Facility*** - a facility which was in operation or for which construction commenced on or before 19 November 1980 (40 CFR 260.10).
- ***Existing Portion*** - the land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit (40 CFR 260.10).
- ***Existing Tank System or Existing Component*** - a tank system or component that is used for the storage or treatment of hazardous waste and that is in operation, or for which installation has commenced on or before 14 July 1986. Installations will have been considered to be commenced if the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system and if either (40 CFR 260.20):
  1. a continuous onsite physical construction of the site or installation program has begun
  2. the owner or operator has entered into contractual obligations that cannot be canceled or modified without substantial loss for physical construction of the site or installation of the tank system to be completed within a reasonable time.
- ***Facility*** - all contiguous land and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combination of them) (40 CFR 260.10).
- ***Final Closure*** - the closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under parts 264 and 265 are no longer conducted at the facility unless subject to the provisions of 262.34 (40 CFR 260.10).
- ***Food-Chain Crops*** - tobacco, crops grown for human consumption, and crops grown for feed for animals whose products are consumed by humans (40 CFR 260.10).
- ***Free Liquids*** - liquids which readily separate from the solid portion of a waste under ambient temperature and pressure (40 CFR 260.10).
- ***Freeboard*** - the vertical distance between the top of a tank or surface impoundment dike, and the surface of the waste contained within it (40 CFR 260.10).

- **Generator** - any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR 261, or whose act first causes a hazardous waste to become subject to regulation (40 CFR 260.10). (NOTE: This typically is used to refer to a facility producing hazardous waste in quantities greater than 1000 kg/mo [2204.62 lb/mo].)
- **Good Management Practice (GMP)** - practices which, although not mandated by law, are encouraged to promote safe operating procedures.
- **Groundwater** - water below the land surface in a zone of saturation (40 CFR 260.10).
- **Halogenated Organic Compounds (HOC)** - those compounds having a carbon-halogen bond which are listed in Appendix 4-1 (40 CFR 268.2).
- **Hazardous Debris** - debris that contains a hazardous waste or that exhibits a characteristic of hazardous waste (40 CFR 268.2).
- **Hazardous Waste** - a solid waste identified as a characteristic or listed hazardous waste in 40 CFR 261.3 (40 CFR 260.10).
- **Hazardous Waste Constituent** - a constituent that caused the hazardous waste to be listed in 40 CFR 261, Subpart D (lists of hazardous wastes from nonspecific and specific sources, and listed hazardous wastes), or a constituent listed in the table of maximum concentrations of contaminants for the toxicity characteristic) (40 CFR 260.10).
- **Hazardous Waste Management Unit** - a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples are a surface impoundment, a waste pile, a treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed (40 CFR 260.10).
- **Incinerator** - an enclosed device using controlled flame combustion that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace (40 CFR 260.10).
- **Incompatible Waste** - a hazardous waste that is unsuitable for (40 CFR 160.10):
  1. placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container liners or tank walls)
  2. commingling with another waste or material under uncontrolled conditions because the commingling conditions produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mist, fumes, or gases, or flammable fumes or gases.
- **Individual Generation Site** - the contiguous site at or on which one or more hazardous waste(s) is generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste, but is considered a single or individual generation site if the site or property is contiguous (40 CFR 260.10).
- **Industrial Furnace** - any of the following enclosed devices that are integral components of manufacturing processes and that use controlled flame devices to accomplish recovery of

materials or energy; cement kilns, lime kilns, aggregate kilns, phosphate kilns, coke ovens, blast furnaces, smelting, melting and refining furnaces, titanium dioxide chloride process oxidation reactors, methane reforming furnaces, pulping liquor recovery furnaces, combustion devices used in the recovery of sulfur values from spent sulfuric acid, halogen acid furnaces, and other devices designated by the Administrator (40 CFR 260.10).

- *In-ground Tank* - a device meeting the definition of tank in 40 CFR 260.10 whereby a portion of the tank is situated to any degree within the ground, thereby preventing visual inspection of that external surface area of the tank that is in the ground (40 CFR 260.10).
- *Injection Wells* - a well into which fluids are injected (40 CFR 260.10).
- *Inner Liner* - a continuous layer of material placed inside a tank or container which protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste (40 CFR 260.10).
- *Installation Inspector* - a person, who by means of his knowledge of the physical sciences and the principles of engineering, acquired by a professional education and related practical experience, is qualified to supervise the installation of tank systems (40 CFR 260.10).
- *International Shipment* - the transportation of hazardous waste into or out of the jurisdiction of the United States (40 CFR 260.10).
- *Land Disposal* - includes, but is not limited to, any placement of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or placement in a concrete vault or bunker intended for disposal purposes (40 CFR 268.2).
- *Land Treatment Facility* - a facility or part of a facility at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure (40 CFR 260.10).
- *Landfill* - a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt bed formation, an underground mine, or a cave (40 CFR 260.10).
- *Landfill Cell* - a discrete volume of a hazardous waste landfill which uses a liner to provide isolation of wastes from adjacent cells or wastes. Examples are trenches and pits (40 CFR 260.10).
- *Large Quantity Generator* - see *Generator* (see page 4-8).
- *Leachate* - any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste (40 CFR 260.10).
- *Leak Detection System* - a system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary structure. Such a system must employ operational controls (e.g., daily visible containment for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to detect contin-

uously and automatically the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure (40 CFR 260.10).

- **Liner** - a continuous layer of natural or manmade materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate (40 CFR 260.10).
- **Management or Hazardous Waste Management** - the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste (40 CFR 260.10).
- **Manifest** - the shipping document originated and signed by the generator containing the information required by 40 CFR 262, Subpart B (40 CFR 260.10).
- **Manifest Document Number** - the USEPA 12-digit number assigned to the generator plus a unique 5 digit number assigned to the Manifest by the generator for recording and reporting purposes (40 CFR 260.10).
- **Miscellaneous Unit** - a hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, underground injection well with appropriate technical standards under 40 CFR 146, containment building, or unit eligible for a research development and demonstration permit under 40 CFR 270.65 (40 CFR 260.10).
- **Movement** - that hazardous waste transported to a facility in an individual vehicle (40 CFR 260.10).
- **New Hazardous Waste Management Facility** - a facility which began operation, or for which construction commenced after 21 October 1976 (40 CFR 260.10).
- **New Tank System or New Component System** - a tank system or component that will be used for the storage and treatment of hazardous waste and for which installation has commenced after 14 July 1986, except however, for purposes of 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction commenced after 14 July 1986 (see also existing tank system.) (40 CFR 260.10).
- **Nonwastewaters** - wastes that do not meet the criteria for wastewaters (40 CFR 268.2).
- **Onground Tank** - a device meeting the definition of tank in 40 CFR 260.10 and that is situated in such a way that the bottom of the tank is on the same level as the adjacent surrounding surface so that the external tank bottom cannot be visibly inspected (40 CFR 260.10).
- **Onsite** - the same or geographically continuous property which may be divided by a public right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection and access is by crossing as opposed to going along the right-of-way (40 CFR 260.10).



- **Open Burning** - the combustion of any material without the following characteristics (40 CFR 260.10):
  1. control of combustion air to maintain adequate temperature for efficient combustion
  2. containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion
  3. control of emission of the gaseous combustion products.
- **Partial Closure** - the closure of a hazardous waste management unit in accordance with the applicable closure requirements of 40 CFR 264 and 265 at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment systems) while other units of the same facility continue to operate (40 CFR 260.10).
- **Pile** - any noncontainerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage that is not a containment building (40 CFR 260.10).
- **Point Source** - any discernible, confined, and discrete conveyance, including, but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture (40 CFR 260.10).
- **Primary Exporter** - any person who is required to originate the manifest for a shipment of hazardous waste in accordance with 40 CFR 262, Subpart B or an equivalent state provision, that specifies treatment, storage, or disposal facility in a receiving country as the facility to which the hazardous waste will be sent and any intermediate arranging for the export (40 CFR 262.51).
- **Publicly Owned Treatment Works (POTW)** - any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a state or municipality (as defined by section 502(4) of the CWA). This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment (40 CFR 260.10).
- **Pump Operating Level** - a liquid level proposed by the owner or operator and approved by the Regional Administrator based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump (40 CFR 264.226(d)(3)).
- **Qualified Groundwater Scientist** - a scientist or engineer who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields as may be demonstrated by state registration, professional certification, or completion of accredited university courses that enable that individual to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport (40 CFR 260.10).
- **Receiving Country** - a foreign country to which a hazardous waste is sent for the purpose of treatment, storage, or disposal (except short-term storage incidental to transportation) (40 CFR 262.51).

- **Replacement Unit** - a landfill, surface impoundment or waste pile unit (40 CFR 260.10):
  1. from which all or substantially all of the waste is removed
  2. that is subsequently reused to treat, store, or dispose of hazardous waste. This does not apply to a unit from which waste is removed during closure, if the subsequent reuse solely involves the disposal of waste from that unit and other closing units or corrective action areas at the facility, in accordance with an approved closure plan or USEPA or state approved corrective action.
- **Representative Sample** - a sample of a universe or whole (e.g., waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole (40 CFR 260.10).
- **Restricted Wastes** - those categories of hazardous wastes that are prohibited from land disposal either by regulation or by statute, in other words, a hazardous waste that is restricted no later than the date of the deadline established in RCRA Section 3004 (40 CFR 268).
- **Runoff** - any rainwater, leachate, or other liquid that drains over land from any part of a facility (40 CFR 260.10).
- **Run-on** - any rainwater, leachate, or other liquid that drains over land onto any part of a facility (40 CFR 260.10).
- **Sludge** - any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 260.10).
- **Small Quantity Generator** - a generator who generates less than 1000 kg [2204.62 lb] or hazardous waste in a calendar month but more than 100 kg [220.46 lb] (40 CFR 260.10).
- **Storage** - the holding of hazardous wastes for a temporary period, at the end of which the hazardous wastes are treated, disposed of, or stored elsewhere (40 CFR 260.10).
- **Sump** - any pit or reservoir that meets the definition of tank and those troughs/trenches connected to it that serve to collect hazardous waste for transport to hazardous waste TSDFs except that as used in the landfill, surface impoundment, and waste pile rules, *sump* means any lined pit or reservoir that serves to collect liquids drained from a leachate collection and removal system or leak detection system for subsequent removal from the system (40 CFR 260.10).
- **Surface Impoundment** - a facility or part of a facility that is a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials designed to hold an accumulation of liquid wastes or wastes containing free liquids and which is not an injection well (40 CFR 260.10).
- **Tank** - a stationary device designed to contain an accumulation of hazardous waste that is constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) which provide structural support (40 CFR 260.10).

- **Tank System** - a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system (40 CFR 260.10).
- **Thermal Treatment** - the treatment of hazardous waste in a device that uses elevated temperature as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste (40 CFR 260.10).
- **Transfer Facility** - any transportation related facility including loading docks, parking areas, storage areas, and other similar areas where shipments of hazardous wastes are held during the normal course of transportation (40 CFR 260.10).
- **Transit Country** - any foreign country, other than a receiving country, through which a hazardous waste is transported (40 CFR 260.10).
- **Transport Vehicle** - a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle (40 CFR 260.10).
- **Transporter** - a person engaged in the offsite transportation of hazardous wastes by air, rail, highway, or water (40 CFR 260.10).
- **Treatability Study** - a study in which a hazardous waste is subjected to a treatment process to determine (40 CFR 260.10):
  1. whether the waste is amenable to the treatment process
  2. what pretreatment (if any) is required
  3. the optimal process conditions needed to achieve the desired treatment
  4. the efficiency of a treatment process for a specific waste or wastes
  5. the characteristics and volumes of residuals from a particular treatment process.

Also included in this definition for the purpose of the 261.4 (e) and (f) exemptions are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies. A treatability study is not a means to commercially treat or dispose of hazardous waste.

- **Treatment** - any method, technique, or process, including neutralization, designed to change the physical, chemical or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume (40 CFR 260.10).
- **Treatment Zone** - a soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized (40 CFR 260.10).
- **Underground Injection** - the subsurface emplacement of fluids through a bored, drilled, or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension (40 CFR 260.10).
- **Underground Tank** - a device meeting the definition of tank in 40 CFR 260.10 whose entire surface area is totally below the surface and covered by the ground (40 CFR 260.10).

- ***Unfit-for-Use Tank System*** - a tank system that has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release of hazardous waste to the environment (40 CFR 260.10).
- ***Unsaturated Zone or Zone of Aeration*** - the zone between the land surface and the water table (40 CFR 260.10).
- ***United States*** - the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands (40 CFR 260.10).
- ***Uppermost Aquifer*** - the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary (40 CFR 260.10).
- ***Waste Explosives*** - this includes waste which has the potential to detonate and bulk military propellants which cannot be safely disposed of through other modes of treatment (40 CFR 265.382).
- ***Wastewater Treatment Unit*** - a device that is part of a wastewater treatment facility subject to regulation under section 402 or 307 of the CWA and receives and treats or stores an influent wastewater that is a hazardous waste (as defined in 40 CFR 261.3) or that generates and accumulates a wastewater treatment sludge that is a hazardous waste, or treats or stores a wastewater treatment sludge and meets the definition of tank or tank system (40 CFR 260.10).
- ***Wastewaters*** - wastes that contain less than 1 percent by weight total organic compounds (40 CFR 268.2).
- ***Zone of Engineering Control*** - an area under the control of the owner/operator that upon detection of a hazardous waste release, can be readily cleaned up before the release of hazardous waste or hazardous constituents to groundwater or surface water (40 CFR 260.10).

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## **HAZARDOUS WASTE MANAGEMENT**

### **GUIDANCE FOR CHECKLIST USERS**

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## **HAZARDOUS WASTE MANAGEMENT**

### **GUIDANCE FOR CHECKLIST USERS (continued)**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
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<b>Additional Requirements for Permitted TSDFs</b>		
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<b>Additional Requirements for Interim Status TSDFs</b>		
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## **HAZARDOUS WASTE MANAGEMENT**

### **GUIDANCE FOR CHECKLIST USERS (continued)**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
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Community Relations	4-259 through 4-263	4-159
Management	4-264 and 4-265	4-163

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## **HAZARDOUS WASTE MANAGEMENT**

### **Records to Review**

*Generator (including TSDFs if they are also generators)*

- Notification (USEPA identification number)
- Hazardous waste manifests
- Manifest exception reports
- Biennial reports
- Delistings
- Speculative accumulation records
- Land disposal restriction certifications
- Employee training documentation
- Hazardous waste tank integrity assessments
- Contingency plan (large quantity generators only)
- Notifications of hazardous waste oil fuel marketing or blending activity

*In addition to the above, TSDFs would require*

- Unmanifested waste reports
- Facility audit reports (Inspection log)
- Waste analysis plan(s)
- Operating record
- Groundwater monitoring records and annual reports (where required)
- Facility Biennial reports
- Closure/Post Closure Plans
- Closure/Post Closure Notices (where applicable)
- Other documents as required by the Permit

### **Physical Features to Inspect**

- Disposal sites
- Accumulations points
- Incinerators
- Vehicles used for transport
- Storage facilities (including drums)
- Surface impoundments



**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**ALL FACILITIES**

**4-1.** Actions or changes since previous review of hazardous waste management should be examined (GMP).

Determine if noncompliance issues have been resolved by obtaining a copy of the previous hazardous waste review.

**4-2.** Copies of all relevant FWS, Federal, state, and local regulations on hazardous waste are required to be maintained at the facility (GMP).

(NOTE: States may obtain authorization to operate the RCRA program from USEPA, provided regulations at least as stringent as USEPA regulations have been passed and an agreement has been signed with USEPA.)

Determine from interview if copies of the following regulations are maintained and kept current at the facility:

- 40 CFR 260, *Hazardous Waste Management System: General.*
- 40 CFR 261, *Identification and Listing of Hazardous Waste.*
- 40 CFR 262, *Standards Applicable to Generators of Hazardous Waste.*
- 40 CFR 263, *Standards Applicable to Transporters of Hazardous Waste.*
- 40 CFR 264, *Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities.*
- 40 CFR 265, *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities.*
- 40 CFR 266, *Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.*
- 40 CFR 268, *Land Disposal Restrictions.*
- 49 CFR 172-179, *Transportation Regulations.*

Determine if the environmental staff is familiar with and knowledgeable in regulatory requirements.

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-3.</b> FWS facilities are required to comply with state and local regulations and compliance agreements negotiated with Federal, state, and local governments (EO 12088, Section 1-1; <i>Federal Facilities Compliance Act</i>, Section 102).</p>	<p>Verify that the facility is complying with state and local hazardous waste requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies where approved.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- additional manifesting requirements</li> <li>- more frequent reporting requirements</li> <li>- transportation</li> <li>- identification of special waste or waste categories</li> <li>- regulation of specific substances as hazardous waste such as: medical, pathological, and infectious waste; used oil; explosives; used batteries</li> <li>- small and very small quantity generator requirements</li> <li>- RCRA permitting of oil/water separators</li> <li>- disposal requirements</li> <li>- construction and operation of storage and disposal facilities</li> <li>- satellite accumulation point requirements</li> <li>- container marking and labeling requirements.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreements.</p>
<p><b>4-4.</b> Facilities will meet regulatory and FWS requirements issued since the finalization of the handbook (a finding under this checklist item will have the citation of the new regulations as a basis of finding).</p>	<p>Determine if any new regulations concerning hazardous waste have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p><b>4-5.</b> FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).</p>	<p>Determine if the facility has received an NOV relating to hazardous waste.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-6.</b> Material resources should be procured and used in a way that minimizes waste production (GMP).</p>	<p>Verify that the facility has a plan to recycle, reuse material, and substitute less hazardous products to greatest extent possible.</p>
<p><b>4-7.</b> Specific persons should be designated responsible for hazardous waste storage areas, and the precise nature of their responsibilities should be specified (GMP).</p>	<p>Verify that specific individuals have been designated responsible for hazardous waste storage areas.</p> <p>Verify that the individuals designated responsible for hazardous waste storage areas are aware of the precise nature of their responsibilities.</p>
<p><b>4-8.</b> A survey of past actions and activities concerning hazardous waste at the facility should be done and appropriate sampling and testing initiated to identify potentially contaminated sites (GMP).</p>	<p>Determine if the facility has had previous spills or actions occur that could lead to possible facility contamination.</p> <p>Verify that actions have been taken to ascertain the extent of contamination.</p>
<p><b>4-9.</b> FWS facilities should report spills of hazardous waste to the Region and the SPCO (GMP).</p>	<p>Verify that FWS facilities report spills of hazardous waste to the Region and the SPCO.</p>



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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL SIZES OF GENERATORS</b></p> <p><b>General</b></p> <p><b>4-10.</b> Facilities that generate solid wastes must determine if the wastes are hazardous wastes (40 CFR 261.3, 261.4(b), 261.24, and 262.11).</p>	<p>(NOTE: Unidentified waste materials and spilled hazardous materials may have to be disposed of as hazardous waste depending on their constituents or characteristics. Determination of whether or not a waste is a hazardous waste can be done through one of the following:</p> <ul style="list-style-type: none"> <li>- knowledge of all the constituents of the waste (MSDSs)</li> <li>- laboratory analysis</li> <li>- knowledge of processes used</li> <li>- a sample which is collected for the sole purpose of testing to determine characteristics or composition.)</li> </ul> <p>Discuss with staff how wastes generated on the facility were identified and classified.</p> <p>Determine if the facility followed USEPA criteria for identifying the characteristics of hazardous waste and USEPA's listed wastes in 40 CFR 261 (see Appendices 4-1, 4-2, 4-3, and 4-4).</p> <p>Determine whether the facility generates, transports, treats, stores, or disposes of any hazardous waste (see Appendices 4-1, 4-2, 4-3, and 4-4 for guidance) and the quantity. If so, go to the appropriate section.</p> <p>(NOTE: The following solid wastes are not considered to be hazardous wastes:</p> <ul style="list-style-type: none"> <li>- household waste</li> <li>- fly ash waste, bottom ash waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels except for facilities that burn hazardous waste</li> <li>- drilling fluids, produced waters, and other wastes affiliated with the explorations, development, or production of crude oil, natural gas, or geothermal energy</li> <li>- solid waste which consists of discarded arsenical-treated wood or wood products which fail the test for Toxicity Characteristics for arsenic and which is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenical treated wood and wood products for those materials intended end use</li> <li>- petroleum contaminated media and debris that fail the test for Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) and are required to meet the corrective action regulations under 40 CFR 280 (see the section titled Petroleum, Oil, and Lubricant (POL) Management.)</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-10. (continued)</b></p>	<ul style="list-style-type: none"> <li>- used chlorofluorocarbon (CFC) refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration, and commercial and industrial air conditioning and refrigeration systems that use CFCs as the heat transfer fluid in a refrigeration cycle, provided that the refrigerant is reclaimed for further use</li> <li>- nonferrous plated used oil filters that are not mixed with a listed hazardous waste if these oil filters have been gravity hot-drained using one of the following methods:               <ul style="list-style-type: none"> <li>- puncturing the filter anti-drain back valve or the filter dome end and hot-draining</li> <li>- hot-draining and crushing</li> <li>- dismantling and hot-draining</li> <li>- any other equivalent hot-draining method which will remove used oil.)</li> </ul> </li> </ul> <p>Verify that listed wastes are tested for reactivity, corrosivity, and ignitability.</p> <p>Verify that wastes are tested for toxicity characteristics.</p> <p>Determine if wastes contain contaminants in greater concentrations than the toxicity characteristics listed in Appendix 4-3.</p> <p>Verify that all data, including quality assurance data, is maintained and kept available for reference or inspection.</p>
<p><b>4-11. Areas where containers of hazardous waste are stored should have secondary containment (GMP).</b></p>	<p>Verify that the areas where containers of hazardous waste are stored have secondary containment.</p>
<p><b>4-12. FWS facilities should keep copies of documentation of where waste is going for disposal (GMP).</b></p>	<p>Verify that the facility has documentation where its waste is going for disposal.</p> <p>(NOTE: Wastes of special concern are waste oil and waste batteries.)</p>
<p><b>4-13. FWS facilities should send the Region copies of documentation as to where waste is going (GMP).</b></p>	<p>Verify that the facility send the Region copies of waste destination documentation.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL SIZES OF GENERATORS</b></p> <p><b>Personnel Training</b></p> <p><b>4-14.</b> All facility personnel who handle hazardous waste should meet certain training requirements (GMP).</p>	<p>Verify that the training program is directed by a person trained in hazardous waste management procedures.</p> <p>Verify that the training program includes the following:</p> <ul style="list-style-type: none"> <li>- contingency plan implementation (emergency procedures, equipment, and systems)</li> <li>- key parameters for automatic waste feed cut-off system</li> <li>- procedures for using, inspecting, and repairing emergency and monitoring equipment</li> <li>- operation of communications and alarm systems</li> <li>- response to fire or explosion</li> <li>- response to leaks or spills</li> <li>- waste turn in procedures</li> <li>- identification of hazardous wastes</li> <li>- container use, marking, labeling, and onsite transportation</li> <li>- manifesting and offsite transportation</li> <li>- accumulation point management</li> <li>- personnel health and safety and fire safety</li> <li>- facility shutdown procedures.</li> </ul> <p>Verify that new employee training is completed within 6 mo of employment.</p> <p>Verify that an annual review of initial training is provided.</p> <p>Verify that employees do not work unsupervised until training is completed.</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained.</p>

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**REGULATORY  
REQUIREMENTS:**

**4-15.** Training records must be maintained for all facility staff who manage hazardous waste (GMP).

**REVIEWER CHECKS:**

Examine training records and verify they include the following:

- job title and description for each employee by name
- written description of how much training each position will obtain
- documentation of training received by name.

Determine if training records are retained for 3 yr after employment at the facility.

Verify that records accompany employees transferred within the FWS.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS (CESQGs)</b></p> <p><b>4-16.</b> Generators of no more than 100 kg/mo [220.46 lb/mo, 28 gal/mo] of hazardous waste may qualify as CESQGs when they meet specific requirements (40 CFR 261.5).</p>	<p>Verify that the following quantity and storage limitations are met:</p> <ul style="list-style-type: none"> <li>- no more than 100 kg [220.46 lb] of hazardous waste is generated in a calendar month</li> <li>- total onsite accumulation does not exceed more than 1000 kg [2204.62 lb] of hazardous waste</li> <li>- no more than 1 kg [2.2 lb] of acute hazardous waste (see Appendix 4-5) is generated in a calendar month, or</li> <li>- no more than a total of 100 kg [220.46 lb] of any residue or contaminated soil, waste, or other debris resulting from the cleanup of any acute wastes in a calendar month is generated.</li> </ul> <p>Verify that wastes are either treated or disposed of in an onsite facility or delivered to an offsite TSDF, either of which are one of the following:</p> <ul style="list-style-type: none"> <li>- permitted</li> <li>- in interim status</li> <li>- authorized to manage hazardous waste by a state with an approved hazardous waste management program</li> <li>- permitted, licensed, or registered by a state to manage municipal or industrial solid waste</li> <li>- a facility which does one of the following: <ul style="list-style-type: none"> <li>- beneficially uses or reuses, or legitimately recycles or reclaims its waste</li> <li>- treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation.</li> </ul> </li> </ul> <p>(NOTE: If a hazardous waste generator meets the requirements for being a CESQG, they are not required to meet any of the standards outlined in 40 CFR 262 through 266, (except 262.11), 268, and 270.)</p> <p>(NOTE: If a facility mixes its waste with used oil, the mixture is subject to the requirements in Subpart G of 40 CFR 279 if it is destined to be burned for energy recovery.)</p> <p>(NOTE: Quantities of acute hazardous waste greater than listed amounts are required to be handled according to the standards in 40 CFR 262 through 266, 268, and 270 and 124.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-17.</b> Empty containers at CESQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).	<p>Verify that for containers or inner liners holding hazardous wastes:</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains.</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L] no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that hold a compressed gas, the pressure in the container approaches atmosphere.</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5 that one of the following is done:</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul>
<b>4-18.</b> Containers at CESQGs should be managed in accordance with good management practices (GMP).	<p>Verify the following by inspecting storage areas:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul>
<b>4-19.</b> Containers of hazardous waste should be kept in designated storage areas at CESQGs (GMP).	<p>Verify that all hazardous waste containers are identified and stored in appropriate areas.</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SMALL QUANTITY GENERATORS (SQGs)</b></p> <p><b>General</b></p> <p><b>4-20.</b> Generators of more than 100 kg [220.46 lb, 28 gal] but less than 1000 kg [2204.62 lb, 273 gal] of hazardous waste per month may qualify as an SQG which can accumulate hazardous waste onsite for 180 days without a permit if specific conditions are met (40 CFR 262.34 (d)(1), 262.34(d)(4), 262.34(e), and 262.34 (f)).</p> <p><b>4-21.</b> SQGs that generate, transport, or handle hazardous wastes must obtain an USEPA identification number (40 CFR 262.12(a), 262.12(b), and 265.11).</p>	<p>Inspect containers, storage, and records.</p> <p>Verify that no more than 1000 kg [2204.62 lb] of hazardous waste is generated in any month.</p> <p>Verify that the onsite accumulation time does not exceed 180 days.</p> <p>(NOTE: The 180 day time period is extended to 270 days if the waste must be transported more than 200 mi to a TSDF. This extension does not apply if a TSDF is available within 200 mi and the facility chooses to transport the waste to a farther away TSDF)</p> <p>Verify that no more than 6000 kg [13,227.73 lb] is allowed to accumulate at the facility.</p> <p>Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE.</p> <p>Verify that the containers and the areas where containers are stored meet the requirements outlined in the subsections pertaining to SQGs titled Containers, Container Storage Areas, Satellite Accumulation Points, and Tank System Storage.</p> <p>(NOTE: When an SQG exceeds the quantity generation or amount accumulation it becomes subject to either Generator or TSDF requirements. When an SQG exceeds the storage time limitation, it becomes subject to all storage, facilities, and permitting requirements.)</p> <p>Examine documentation from USEPA for the facility's generator identification number.</p> <p>Verify that correct identification number is used on all appropriate documentation (i.e., manifests).</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-22.</b> An SQG must not offer its hazardous waste to transporters or to TSDFs that have not received an USEPA identification number (40 CFR 262.12(c)).</p>	<p>Examine records pertaining to disposal contract awards and verify that all transporters of hazardous waste of TSDFs have an USEPA identification number.</p>
<p><b>4-23.</b> SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.42(b), and 262.44).</p>	<p>Verify that signed copies of returned manifests are kept for 3 yr.</p> <p>Verify that exception reports were submitted to the USEPA Regional Administrator when a signed manifest copy was not received within 60 days of the waste being accepted by the initial transporter.</p> <p>Verify that exception reports are kept for at least 3 yr.</p> <p>Verify that records of test results, waste analyses, and determinations are kept for 3 yr.</p> <p>(NOTE: The requirement to prepare a manifest does not apply if:</p> <ul style="list-style-type: none"> <li>- the waste is reclaimed under contractual agreement and:</li> <li>- the type of waste and frequency of shipments are specified in the agreement</li> <li>- the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer</li> <li>- the generator maintains a copy of the reclamation agreement for at least 3 yr after termination of the agreement.)</li> </ul> <p>(NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p>
<p><b>4-24.</b> SQGs are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p>	<p>Verify that appropriate records are kept for at least 3 yr from the date the waste was last sent to onsite or offsite TSDFs.</p> <p>(NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-25.</b> SQGs are required to have an emergency coordinator and emergency response planning (40 CFR 262.34(d)(5)).</p> <p><b>Containers</b></p> <p><b>4-26.</b> Empty containers at SQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p><b>4-27.</b> Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34(d)(2) and 265.171).</p>	<p>Verify that the facility has an emergency coordinator.</p> <p>Verify that emergency information is posted next to the telephone:</p> <ul style="list-style-type: none"> <li>- name and telephone number of emergency coordinator</li> <li>- location of fire extinguishers and spill control materials</li> <li>- location of fire alarms (if present)</li> <li>- telephone number of fire department.</li> </ul> <p>Verify that waste handlers are familiar with waste handling and emergency procedures.</p> <p>Verify that for containers or inner liners holding hazardous wastes:</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L] no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmosphere.</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5 that one of the following is done:</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul> <p>Verify that containers are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-28.</b> Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(d)(2) and 265.172).</p>	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.</p>
<p><b>4-29.</b> Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34(d)(2) and 265.173).</p>	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p>
<p><b>4-30.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at SQGs must comply with safe management practices (40 CFR 262.34(d)(2) and 265.177).</p>	<p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not:</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Appendix 4-6 should not be placed in the same drum.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-31.</b> Containers of hazardous waste at SQGs should be managed in accordance with good management practices (GMP).</p> <p><b>Satellite Accumulation Points</b></p> <p><b>4-32.</b> All SQGs may accumulate as much as 55 gal of hazardous waste or 1 qt of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).</p>	<p>Inspect containers and storage areas to determine the following:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul> <p>(NOTE: This type of storage is often referred to as a satellite accumulation point.)</p> <p>Verify that the satellite accumulation point is near the point of generation and is under the control of the operator of the waste generating process.</p> <p>Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed.</p> <p>Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification.</p> <p>(NOTE: See Appendices 4-1, 4-2, 4-3, 4-4, and 4-5 for a guidance list of hazardous and acute wastes.)</p> <p>Verify that when waste is accumulated in excess of quantity limitations, the following actions are taken by interviewing the shop managers:</p> <ul style="list-style-type: none"> <li>- the excess container is marked with the date the excess amount began accumulating</li> <li>- the waste is transferred to a 90 day or permitted storage area within 3 days.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Container Storage Areas</b></p> <p>4-33. Containers of hazardous waste at SQGs should be kept in storage areas designated in the management plan (GMP).</p> <p>4-34. SQG storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(d)(4) and 265.30 through 265.37).</p>	<p>Verify that all containers are identified and stored in appropriate areas.</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG facility:</p> <ul style="list-style-type: none"> <li>- internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency.</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation.</p> <p>Verify that police, fire departments, emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services.</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.</p>

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p><b>4-35.</b> SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).</p> <p><b>Tank Systems Storage</b></p> <p><b>4-36.</b> SQGs must comply with certain storage tank requirements (40 CFR 262.34(d)(3) and 265.201(a) through 265.201(c)).</p>	<p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.</p> <p>Determine if the facility is a small quantity generator that stores or treats wastes in tanks and verify that:</p> <ul style="list-style-type: none"> <li>- the tank prevents:               <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- damage to structural integrity of the device or facility</li> <li>- threats to human health or the environment through other means</li> </ul> </li> <li>- no treatment reagent or hazardous wastes are placed in the tank that would cause it to rupture, leak, corrode, or otherwise fail before the end of its intended life</li> <li>- uncovered tanks have at least 60 cm (2 ft) of freeboard unless the tank has a containment structure, drainage control system, or a diversion structure with a volume that equals or exceeds the capacity of the top 60 cm (2 ft) of the tank</li> <li>- continuous feed tanks have a wastefeed cutoff or other stop/bypass system.</li> </ul> <p>Verify that the following are inspected at the indicated times:</p> <ul style="list-style-type: none"> <li>- discharge control equipment at least once each operating day</li> <li>- monitoring equipment (pressure and temperature gauges) at least once each operating day</li> <li>- waste level in tank at least once each operating day</li> <li>- construction material of the tank for corrosion or leakage weekly</li> <li>- surrounding area for leakage and/or contamination at least weekly.</li> </ul>



**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-40.</b> When an SQG is managing a restricted waste a notice must be issued to the TSD in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7 (a)(1) through 268.7(a)(3) and 268.7 (a)(10)).</p>	<p>Verify that for restricted waste that does not meet the applicable treatment standards or exceeds the applicable prohibition levels the notice is issued and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- for hazardous debris, the contaminants subject to treatment and the following statement "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45"</li> <li>- the waste analysis data, when available.</li> </ul> <p>Verify that for restricted waste that can be land disposed without further treatment (this does not include debris that does not contain hazardous waste) the notice includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268.</li> </ul> <p>Verify that, for restricted waste that is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- for hazardous debris, the contaminant subject to treatment</li> <li>- the date the waste is subject to prohibitions.</li> </ul> <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-41.</b> SQGs that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(4) and 268.7(a)(10)).</p>	<p>Verify that the plan describes the procedures that the generator will carry out to comply with treatment standards.</p> <p>(NOTE: SQGs treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.)</p> <p>Verify that the plan is kept onsite and:</p> <ul style="list-style-type: none"> <li>- the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated</li> <li>- the plan is filed with the USEPA Regional Administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified.</li> </ul> <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement.)</p>
<p><b>4-42.</b> SQGs are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(5) through 268.7(a)(7) and 268.7(a)(10)).</p>	<p>Verify that if the facility is using generator knowledge to determine whether a waste meets land disposal restriction requirements, the supporting data used in making this determination is retained in the facility operating record.</p> <p>Verify that if the facility has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained.</p> <p>Verify that if the facility has determined that they are managing a restricted waste that is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the facilities files stating that the generated waste is excluded.</p> <p>Verify that a copy of all notices, certifications, demonstrations, waste analysis data and other documentation is kept for at least 5 yr from the date that the waste was last sent to onsite or offsite treatment, storage, or disposal.</p> <p>Verify that SQGs with tolling agreement retain the agreement and copies of notification and certification for at least 3 yr after the agreement expires.</p>
<p><b>4-43.</b> The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).</p>	<p>Verify that land disposal restricted waste is not stored at the facility unless: the SQG is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met.</p> <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
4-43. (continued)	<p>(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)</p> <p>Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a facility that meets the requirements of 40 CFR 761.65(b) (see Special Pollutants Management) and is removed from storage within 1 yr of the date it was first placed into storage.</p>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>GENERATORS</b></p> <p><b>General</b></p> <p><b>4-44.</b> Generators who produce more than 1000 kg/mo [2204.62 lb/mo, 273 gal/mo] of hazardous waste may accumulate hazardous waste onsite for 90 days or less without a permit or interim status provided they meet certain conditions (40 CFR 262.34(a)(2), 262.34 (a)(3), and 262.34 (b)).</p> <p><b>4-45.</b> A generator that generates, transports, or handles hazardous wastes must obtain a USEPA identification number (40 CFR 262.12(a), 262.12 (b), 264.11, and 265.11).</p> <p><b>4-46.</b> Generators must not offer their waste to transporters or TSDFs that have not received a USEPA identification number (40 CFR 262.12(c)).</p>	<p>Inspect each accumulation point and interview the accumulation point manager. Verify that:</p> <ul style="list-style-type: none"> <li>- the recorded start date indicates no container or tank has been accumulating a hazardous waste longer than 90 days (unless granted a 30 day extension)</li> <li>- each container and tank is labeled or marked clearly with the words HAZARDOUS WASTE.</li> </ul> <p>Verify that containers, tanks, and containment buildings meet the standards outline in the subsections pertaining to Generators titled Containers, Container Storage Areas, Tank System Storage, Satellite Accumulation Points, and Containment Buildings.</p> <p>(NOTE: A generator who meets these standards is exempt from meeting the closure requirements outlined in 40 CFR 265.110 through 265.156, except for 265.111 and 265.114.)</p> <p>(NOTE: A generator who accumulates hazardous waste for more than 90 days (without an extension), is subject to all storage facility and permitting requirements.)</p> <p>Examine documentation from USEPA for the facility's generator identification number.</p> <p>Verify that correct identification number is used on all appropriate documentation (i.e., manifests).</p> <p>Verify that all transporters of hazardous wastes or TSDFs used by the generator have a USEPA identification number by examining records pertaining to disposal contract awards.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-47.</b> Generators of hazardous waste must submit a biennial report to the Regional Administrator by 1 March of even numbered years (40 CFR 262.40(b) and 262.41 (a)).</p>	<p>Verify that the biennial report (USEPA Form 8700-13A) is complete and was submitted in a timely manner.</p> <p>Verify that copies are kept for 3 yr.</p> <p>(NOTE: Reporting for exports of hazardous waste is not required.)</p> <p>(NOTE: This does not apply if an annual report was submitted to the state.</p>
<p><b>4-48.</b> Generators are required to use manifests, file manifest exception reports, and maintain records (40 CFR 262.40(b), 262.40(d), and 262.42 (a)).</p>	<p>Verify that manifests are used when shipping the waste offsite.</p> <p>Verify that exception reports are filed with the USEPA Regional Administrator if a copy of the manifest is not received within 45 days of after the waste is accepted by the initial transporter.</p> <p>Verify that manifests and exception reports are kept for 3 yr.</p> <p>(NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action.)</p>
<p><b>4-49.</b> Generators are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p>	<p>Verify that the appropriate records are kept for 3 yr from the date the waste was last sent to the onsite or offsite TSDF.</p> <p>(NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action or at the request of the USEPA Administrator.)</p>
<p><b>4-50.</b> Generator facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(a)(4) and 265.30 through 265.37).</p>	<p>Determine if the following required equipment is easily accessible and in working condition at the facility:</p> <ul style="list-style-type: none"> <li>- internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-50. (continued)</b></p>	<p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency.</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation.</p> <p>Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services.</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.</p>
<p><b>Personnel Training</b></p> <p><b>4-51.</b> All facility personnel who handle hazardous waste must meet certain training requirements (40 CFR 262.34(a)(4) and 265.16(a) through 265.16(c)).</p>	<p>Verify that the training program is directed by a person trained in hazardous waste management procedures.</p> <p>Verify that the training program includes the following:</p> <ul style="list-style-type: none"> <li>- contingency plan implementation (emergency procedures, equipment, and systems)</li> <li>- key parameters for automatic waste feed cut-off system</li> <li>- procedures for using, inspecting, and repairing emergency and monitoring equipment</li> <li>- operation of communications and alarm systems</li> <li>- response to fire or explosion</li> <li>- response to leaks or spills</li> <li>- waste turn in procedures</li> <li>- identification of hazardous wastes</li> <li>- container use, marking, labeling, and onsite transportation</li> <li>- manifesting and offsite transportation</li> <li>- accumulation point management</li> <li>- personnel health and safety and fire safety</li> <li>- facility shutdown procedures.</li> </ul> <p>Verify that new employee training is completed within 6 mo of employment.</p> <p>Verify that an annual review of initial training is provided.</p> <p>Verify that employees do not work unsupervised until training is completed.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-51. (continued)</b></p> <p><b>4-52.</b> Training records must be maintained for all facility staff who manage hazardous waste (40 CFR 262.34 (a)(4), 265.16 (d) and 265.16(e)).</p> <p><b>Contingency Plans and Emergency Coordinators</b></p> <p><b>4-53.</b> Generators must have a contingency plan (40 CFR 262.34 (a)(4) and 265.50 through 265.54).</p>	<p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained.</p> <p>Examine training records and verify they include the following:</p> <ul style="list-style-type: none"> <li>- job title and description for each employee by name</li> <li>- written description of how much training each position will obtain</li> <li>- documentation of training received by name.</li> </ul> <p>Determine if training records are retained for 3 yr after employment at the facility.</p> <p>Verify that records accompany employees transferred within the FWS.</p> <p>(NOTE: Generating facilities may be addressed in the facility's SPCC plan or other emergency plan, or if none exists, in a separate contingency plan.)</p> <p>Verify that the contingency plan is designed to minimize hazards to human health or the environmental from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents.</p> <p>Verify that the plan includes the following:</p> <ul style="list-style-type: none"> <li>- a description of actions to be taken during an emergency</li> <li>- a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams as appropriate</li> <li>- names, addresses, and phone numbers of all persons qualified to act as emergency coordinator</li> <li>- a list of all emergency equipment at the facility and where this equipment is required, located, and what it looks like</li> <li>- an evacuation plan for facility personnel where there is a possibility evacuation would be needed.</li> </ul> <p>Verify that copies of the contingency plan are maintained at the facility and also have been submitted to organizations which may be called upon to provide emergency services.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-53. (continued)</b></p>	<p>Verify that the contingency plan is routinely reviewed and updated, especially when the facility is issued a new permit, the plan fails in an emergency, the emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes.</p>
<p><b>4-54.</b> Each generator must have an emergency coordinator on the facility premises or on call at all times (40 CFR 262.34(a)(4) and 265.55).</p>	<p>Verify that, at all times, there is at least one employee at the facility or on call with responsibility for coordinating all emergency response measures.</p> <p>Verify that the emergency coordinator is thoroughly familiar with the facility, the characteristics of the waste handled, and the provisions of the contingency plan. In addition, verify that the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan.</p>
<p><b>4-55.</b> Emergency coordinators at generators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 262.34(a)(4) and 265.56(a) through 265.56(i)).</p>	<p>Review the contingency plan for the generator facility.</p> <p>Verify that the emergency coordinator is required to follow these emergency procedures:</p> <ul style="list-style-type: none"> <li>- immediately activate facility alarms or communication systems and notify appropriate facility, state, and local response parties</li> <li>- identify the character, exact source, amount, and a real extent of any released materials</li> <li>- assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water or chemicals used to control fire or explosions, etc.)</li> <li>- stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases</li> <li>- collect and contain the released waste</li> <li>- remove or isolate containers when necessary</li> <li>- monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate</li> <li>- provide for treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or other material</li> <li>- ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed</li> <li>- ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed</li> <li>- notify USEPA, and appropriate state and local authorities when cleanup is complete and operation resumes.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-56.</b> Generator facility operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 262.34(a)(4) and 265.56(j)).</p> <p><b>Containers</b></p> <p><b>4-57.</b> Empty containers at generators previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p><b>4-58.</b> Containers used to store hazardous waste at generators must be in good condition and not leaking (40 CFR 262.34(a)(1)(i) and 265.171).</p>	<p>Determine if incidents have been recorded and corrective actions taken through a review of the facility operating records.</p> <p>Verify that written reports have been submitted to the USEPA regional administrator within 15 days after the incident.</p> <p>Verify that for containers or inner liners holding hazardous wastes:</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L] no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmosphere.</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5 that one of the following is done:</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul> <p>Verify that the rinse water has been tested.</p> <p>Verify that containers are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-59.</b> Containers used at generators must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(a)(1)(i) and 265.172).</p>	<p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.</p>
<p><b>4-60.</b> Containers must be closed during storage and handled in a safe manner at generators (40 CFR 262.34(a)(1)(i) and 265.173).</p>	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums and look for funnels).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p>
<p><b>4-61.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at generators must comply with safe management practices (40 CFR 262.34(a)(1)(i) and 265.177).</p>	<p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not:</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- by any other like means threaten human health or the environment.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Appendix 4-6 should not be placed in the same drum.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-62.</b> Containers used to store hazardous waste at generators should be managed in accordance with good management practices (GMP).</p> <p><b>Satellite Accumulation Points</b></p> <p><b>4-63.</b> Generators may accumulate as much as 55 gal of hazardous waste or 1 qt [0.95 L] of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).</p>	<p>Verify the following by inspecting container storage areas:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul> <p>(NOTE: This type of storage is often referred to as a satellite accumulation point.)</p> <p>Verify that the satellite accumulation point is near the point of generation and is under the control of the operator of the waste generating process.</p> <p>Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed.</p> <p>Verify that the containers are marked HAZARDOUS WASTE or with other appropriate identification.</p> <p>(NOTE: See Appendices 4-1, 4-2, 4-3, 4-4, and 4-5 for a guidance list of hazardous and acute wastes.)</p> <p>Verify that when waste is accumulated in excess of quantity limitations the following actions are taken by interviewing the shop managers:</p> <ul style="list-style-type: none"> <li>- the excess container is marked with the date the excess amount began accumulating</li> <li>- the waste is transferred to a 90 day or permitted storage area within 3 days.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Container Storage Areas</b></p> <p><b>4-64.</b> At generators, containers of hazardous waste should be kept in designated storage areas (GMP).</p> <p><b>4-65.</b> Containers holding ignitable or reactive waste must be located 15 m (50 ft) from the property line of the generators facility (40 CFR 262.34(a)(1)(i) and 265.176).</p> <p><b>4-66.</b> Generators must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).</p>	<p>Verify that all containers are identified and stored in appropriate areas.</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Determine the distance from storage containers holding ignitable or reactive waste to the property line.</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.</p>
<p><b>Tank System Storage</b></p> <p><b>4-67.</b> Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at generators (40 CFR 262.34(a)(1)(ii), 265.190(a), 265.190(b), and 265.193 (a)).</p>	<p>Verify that the following types of tanks used to store or treat hazardous waste have secondary containment:</p> <ul style="list-style-type: none"> <li>- all new tank systems or components</li> <li>- all existing tank systems used to store or treat USEPA Hazardous Waste Numbers F020, F021, F022, F023, F026 and F027</li> <li>- existing tank systems of known documented age that are 15 yr of age</li> <li>- existing tank systems for which the age cannot be documented but are located at a facility that is older than 15 yr.</li> </ul>



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**REGULATORY  
REQUIREMENTS:**

**4-69.** External liners, vaults, and double-walled tanks at generators are required to meet specific standards (40 CFR 262.34(a)(1)(ii), 265.190(a) and 265.193(e)).

**REVIEWER CHECKS:**

Verify that external liner systems meet the following requirements:

- it is designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained
- it prevents run-on and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle run-on or infiltration
- it is free of cracks or gaps
- it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release
- capacity is sufficient to contain precipitation from a 25-yr, 24-h rainfall event.

Verify that vault systems meet the following criteria:

- it will contain 100 percent of the capacity of the largest tank within its boundary
- it prevents run-on and infiltration of precipitation unless there is sufficient excess capacity
- it is constructed with chemical-resistant water stops at all joints
- it has an impermeable interior coating that is compatible with the wastes it contains
- has a means to protect against the formation and ignition of vapors within the vault if the waste is ignitable or reactive
- it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault.

Verify that double-walled tanks meet the following criteria:

- it is designed as an integral structure so that any release is contained by the outer shell
- it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal
- it has a built-in continuous leak detection system capable of detecting a release within 24 h.

(NOTE: Tank systems that are used to store or treat hazardous waste that contain no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-70.</b> Tank ancillary equipment at generators must also be provided with secondary containment (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(f)).</p>	<p>Verify that ancillary equipment, except for the following, has secondary containment:</p> <ul style="list-style-type: none"> <li>- aboveground piping that are visually inspected for leaks on a daily basis</li> <li>- welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis</li> <li>- sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis</li> <li>- pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contain no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<p><b>4-71.</b> Tank systems that are required to have secondary containment at generators (see checklist item 4-68) that do not have secondary containment are required to meet specific requirements (40 CFR 262.34(a)(1)(ii), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).</p>	<p>Verify that tank systems without secondary containment meet the following:</p> <ul style="list-style-type: none"> <li>- for nonenterable underground tanks a leak test is conducted annually</li> <li>- for other than nonenterable underground tanks either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered professional engineer</li> <li>- for ancillary equipment a leak test or other approved integrity assessment at least annually.</li> </ul> <p>Verify that the facility maintains a record of the results of testing and assessments.</p> <p>Verify that tank systems which store or treat materials that become hazardous waste after 14 July 1986 are assessed within 12 mo after the waste becomes hazardous.</p> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contain no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-72.</b> Generators with new tank systems must submit to the Regional Administrator a written assessment reviewed and certified by an independent, qualified, registered professional engineer to certify that the tank system was installed according to specific standards (40 CFR 262.34(a)(1)(ii) and 265.192).</p>	<p>Determine if the facility has any new tank systems.</p> <p>Verify that when the tanks are installed they are handled so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance.</p> <p>Verify that the facility keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank.</p>
<p><b>4-73.</b> Tanks used for hazardous waste treatment or storage at generators must follow certain operating requirements (40 CFR 262.34(a)(1)(ii) and 265.194).</p>	<p>Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment or containment system) to fail.</p> <p>Verify that appropriate measures are taken to prevent overfill, including:</p> <ul style="list-style-type: none"> <li>- spill prevention controls</li> <li>- overfill prevention controls</li> <li>- maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave, wind action, or precipitation for uncovered tanks.</li> </ul>
<p><b>4-74.</b> Tank systems at generators must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(a)(1)(ii), 265.198 and 265.199).</p>	<p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met:</p> <ul style="list-style-type: none"> <li>- the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met</li> <li>- the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react</li> <li>- the tank system is used solely for emergencies.</li> </ul> <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's <i>Flammable and Combustible Liquids Code</i> are maintained.</p> <p>Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met.</p>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-74. (continued)</b>	<p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met.</p>
<b>4-75. Generators must conduct inspections of tank systems and associated equipment (40 CFR 262.34(a)(1)(ii) and 265.195).</b>	<p>Verify that a schedule and procedure has been developed and is followed to inspect overfill controls at permitted facilities.</p> <p>Determine if the following are inspected at least once a day:</p> <ul style="list-style-type: none"> <li>- data gathered from monitoring and leak detection equipment</li> <li>- overfill/spill control equipment at interim state facilities to ensure it is in good working order</li> <li>- aboveground portions of the tank to detect corrosion or releases</li> <li>- tank monitoring equipment (e.g., pressure and temperature gauges)</li> <li>- area surrounding tank including the secondary containment system for signs of leakage (wet spots, dead vegetation).</li> </ul> <p>Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter.</p> <p>Verify that all sources of impressed current are inspected and/or tested every other month.</p> <p>Verify that inspections are documented.</p>
<b>4-76. Tank systems or secondary containment systems at generators from which there has been a leak or spill, or which have been declared unfit for use, must be removed from service immediately and specific requirements met (40 CFR 262.34(a)(1)(ii) and 265.196).</b>	<p>Verify that the following steps are taken:</p> <ul style="list-style-type: none"> <li>- the flow or addition of hazardous wastes to the tank is stopped</li> <li>- the hazardous waste is removed from the tank:</li> <li>- within 24 h of detection (or other reasonable time as demonstrated by the owner/operator) remove as much waste from the tank as necessary to prevent further release and allow inspection and repair</li> <li>- within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment) remove waste released to secondary containment system</li> <li>- a visual inspection of the release is done and:</li> <li>- action is taken to prevent further migration to soils or surface or ground-water</li> <li>- any visible contamination of soil and surface water is removed and disposed.</li> </ul> <p>Verify that notification is made within 24 h for any release to the environment to the Regional Administrator.</p> <p>Verify that a report is submitted within 30 days.</p>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-76. (continued)</b>	<p>Verify that the tank and/or secondary containment is repaired prior to its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer.</p>
<b>4-77. Generators are required to follow specific procedures when closing a tank system (40 CFR 262.34(a)(1) (ii), 265.197(a), and 265.197(b)).</b>	<p>Determine if the facility has closed any tank systems.</p> <p>Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated.</p> <p>Verify that if it is not possible and/or practicable to remove or decontaminate all soils, the facility closes the tank and performs postclosure care as is required for landfills.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Containment Buildings</b></p> <p><b>4-78.</b> Generators with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 262.34(a)(1)(iv), 264.1100, and 265.1100).</p>	<p>(NOTE: According to the <i>Background Information</i> published on page 37221 of the 18 August 1992 edition of the Federal Register, a hazardous waste containment building involves the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit. This is not a building that holds drums or tanks filled with hazardous waste, but a building that holds the hazardous waste itself.)</p> <p>Verify that the containment building meets the following:</p> <ul style="list-style-type: none"> <li>- it is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit</li> <li>- if the unit is used to manage liquids: <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier</li> <li>- there is a liquid collection system designed and constructed of materials to minimized the accumulation of liquid on the primary barrier</li> <li>- there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> </ul> </li> <li>- it has controls sufficient to prevent fugitive dust emissions</li> <li>- it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.</li> </ul>



**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-79.</b> Containment buildings are required to be designed according to specific standards (40 CFR 262.34(a)(1)(iv), 264.1101(a)(1) through 264.1101(a)(2), 264.1101(b), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).</p>	<p>Verify that containment buildings meet the following design standards:</p> <ul style="list-style-type: none"> <li>- it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes</li> <li>- the floor and containment walls, including any required secondary containment system, are designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has sufficient structural strength to prevent collapse or other failure</li> <li>- all surfaces in contact with hazardous wastes are compatible with the wastes</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit and is appropriate for the chemical and physical characteristics of the waste.</li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
4-79. (continued)	<p>Verify that if the containment building is going to manage hazardous wastes with free liquids or treated with free liquids the following design requirements are also met:</p> <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface)</li> <li>- there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier: <ul style="list-style-type: none"> <li>- the primary barrier is sloped to drain liquids to the associated collection system</li> <li>- liquids and wastes are collected and removed to minimized hydraulic head on the containment system at the earliest practicable time</li> </ul> </li> <li>- there is a secondary containment system, including a secondary barrier, designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> <li>- the leak detection component of the secondary containment system meets the following: <ul style="list-style-type: none"> <li>- it is constructed with a bottom slope of 1 percent or more</li> <li>- it is constructed of a granular drainage materials with a hydraulic conductivity of <math>1 \times 10^{-2}</math> cm/s or more and a thickness of 12 in. (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of <math>3 \times 10^{-5}</math> m<sup>2</sup>/s or more</li> </ul> </li> <li>- if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building</li> <li>- the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and by any equipment used.</li> </ul> <p>(NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met:</p> <ul style="list-style-type: none"> <li>- the doors and windows provide an effective barrier again fugitive dust emissions</li> <li>- the unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.)</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-79. (continued)</b>	<p>(NOTE: A containment building can serve as secondary containment systems for tanks within the building if:</p> <ul style="list-style-type: none"> <li>- it meets the requirements of 264.193(d)(1) (see checklist item 4-118)</li> <li>- it meets the requirements of 264.193(b) and 264.193(c)(1 2) (see checklist item 4-118.)</li> </ul>
<p><b>4-80.</b> Containment buildings are required to be operated according to specific standards (40 CFR 262.34(a)(1)(iv), 264.1101(a)(3), 264.1101(c)(1), 264.1101(c)(4), 265.1101(a)(3), 265.1101(c)(1), and 265.1101 (c)(4)).</p>	<p>Verify that incompatible wastes or treatment reagents are not placed in the building or its secondary containment system if they could cause the unit or the secondary containment system to leak, corrode, or otherwise fail.</p> <p>Verify that the following operational procedures are done:</p> <ul style="list-style-type: none"> <li>- controls and practices are used to ensure the containment of the waste within the building</li> <li>- the primary barrier is maintained so that it is free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier</li> <li>- the level of the stored/treated hazardous waste is maintained so that the height of any containment wall is not exceeded</li> <li>- measures are implemented to prevent the tracking of hazardous waste out of the unit by personnel or equipment used in the handling of the waste</li> <li>- there is a designated area for the decontamination of equipment and collection of rinsate</li> <li>- any collected rinsate is managed as needed according to its constituents</li> <li>- measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions</li> <li>- particulate collection devices are maintained and operated according to sound air pollution control practices.</li> </ul> <p>Verify that data is gathered from monitoring equipment and leak detection equipment and the site is inspected at least once every 7 days and the results recorded in the operating record.</p> <p>Verify that there is a written description of procedures to ensure that waste does not remain in the building for more than 90 days.</p> <p>Verify that there is documentation that the waste does not remain for more than 90 days.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-81.</b> Containment buildings are required to be certified by a registered professional engineer (40 CFR 262.34(a)(1)(iv), 264.1101(c)(2), 265.1101 (c)(2)).</p>	<p>Verify that the building has been certified.</p>
<p><b>4-82.</b> Leaks in containment buildings must be repaired and reported (40 CFR 262.34(a)(1)(iv), 264.1101(c)(3), and 265.1101(c)(3)).</p>	<p>Verify that if a condition is detected that could lead to a leak or has already caused a leak, it is repaired promptly.</p> <p>Verify that when a leak is discovered:</p> <ul style="list-style-type: none"> <li>- the discovery is recorded in the facility operating record</li> <li>- the portion of the containment building that is affected is removed from service</li> <li>- a cleanup and repair schedule is established</li> <li>- within 7 day the Regional Administrator is notified and within 14 working days written notice is provided to the Regional Administrator</li> <li>- the Regional Administrator is notified upon the completion of all repairs and certification from a registered professional engineer is also submitted.</li> </ul>
<p><b>4-83.</b> Containment buildings that contain both areas with and without secondary containment must meet specific requirements (40 CFR 262.34(a)(1)(iv), 264.1101(d), and 265.1101(d)).</p>	<p>Verify that each area is designed and operated according to the appropriate requirements.</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment.</p> <p>Verify that a written description is maintained in the facilities operating log of operating procedures used to maintain the integrity of areas without secondary containment.</p>
<p><b>4-84.</b> When a containment building is closed specific requirements must be met (40 CFR 262.34(a)(1)(iv), 264.1102, and 265.1102).</p>	<p>Determine if the facility has closed a containment building recently.</p> <p>Verify that at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated.</p> <p>Verify that the containment building is closed in accordance with closure and postclosure requirements for TSDFs as outlined in the subsections pertaining to all TSDFs titled Documentation Requirements and Closure.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-84. (continued)</b></p> <p><b>Disposal of Restricted Waste</b></p> <p><b>4-85.</b> Facilities that generate hazardous wastes must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7).</p> <p><b>4-86.</b> When a generator is managing a restricted waste a notice must be issued to the TSDF in writing of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(1) through 268.7(a)(3) and 268.7(a)(10)).</p>	<p>Verify that if it is found that not all contaminated subsoils can be practicably removed or decontaminated, the facility is closed and landfill postclosure requirements are implemented.</p> <p>Determine whether the generator tests for restricted wastes.</p> <p>Determine if the facility generates restricted wastes by reviewing test results (see Appendix 4-7).</p> <p>Verify that for restricted waste that does not meet the applicable treatment standards or exceeds the applicable prohibition levels the notice is issued and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- for hazardous debris, the contaminants subject to treatment and the following statement "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45"</li> <li>- the waste analysis data, when available.</li> </ul> <p>Verify that for restricted waste that can be land disposed without further treatment (this does not include debris that does not contain hazardous waste) the notice includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268.</li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-86. (continued)</b></p>	<p>Verify that, for restricted waste that is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes:</p> <ul style="list-style-type: none"> <li>- the USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment</li> <li>- the waste analysis data, when available</li> <li>- for hazardous debris, the contaminant subject to treatment</li> <li>- the date the waste is subject to prohibitions.</li> </ul>
<p><b>4-87. Generators that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(4) and 268.7(a)(10)).</b></p>	<p>Verify that the plan describes the procedures that the generator will carry out to comply with treatment standards.</p> <p>(NOTE: Generators treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.)</p> <p>Verify that the plan is kept onsite and:</p> <ul style="list-style-type: none"> <li>- the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated</li> <li>- the plan is filed with the USEPA Regional Administrator or state authorized official at least 30 days prior to the treatment activity, with delivery verified.</li> </ul>
<p><b>4-88. Generators are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(5) through 268.7(a)(7) and 268.7(a)(10)).</b></p>	<p>Verify that if the facility is using generator knowledge to determine whether a waste meets land disposal restriction requirements, the supporting data used in making this determination is retained in the facility operating record.</p> <p>Verify that if the facility has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained.</p> <p>Verify that if the facility has determined that they are managing a restricted waste that is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the facility's files stating that the generated waste is excluded.</p> <p>Verify that a copy of all notices, certifications, demonstrations, waste analysis data and other documentation is kept for at least 5 yr from the date that the waste was last sent to onsite or offsite treatment, storage, or disposal.</p>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-89.</b> Generators who first claim that hazardous debris is excluded from the definition of hazardous waste are required to meet specific notification and certification requirements (40 CFR 268.7(d)).	<p>Verify that a one-time notification is submitted to the Director or authorized state including the following:</p> <ul style="list-style-type: none"> <li>- the name and address of the facility receiving the treated waste</li> <li>- a description of the hazardous debris as initially generated, including the applicable USEPA hazardous waste number</li> <li>- for excluded debris, the technology used to treat the debris.</li> </ul> <p>Verify that the notification is updated if the debris is shipped to a different facility.</p> <p>Verify that for debris that is excluded, if a different type of debris is treated or if a different technology is used to treat the debris the notification is updated.</p>
<b>4-90.</b> The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).	<p>Verify that land disposal restricted waste is not stored at the facility unless: the generator is storing the wastes in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met.</p> <p>(NOTE: If the 90 day storage period is exceeded, the generator is required to be permitted as a TSDF.)</p> <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days.</p> <p>(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)</p> <p>Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a facility that meets the requirements of 40 CFR 761.65(b) (see Special Pollutants Management) and is removed from storage within 1 yr of the date it was first placed into storage.</p>





**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**TRANSPORTATION  
OF HAZARDOUS  
WASTE**

**4-91.** Transporters of hazardous waste that is required to be manifested must have an USEPA identification number and must comply with manifest management requirements (40 CFR 263.10(a), 263.10(b), 263.11, 263.20(a) through 263.20(d), 263.21, and 263.22(a)).

(NOTE: These requirements do not apply to the onsite transportation of hazardous waste. Nor do they apply to CESQGs.)

Determine if the facility transports hazardous waste offsite using their own vehicles or a contractor.

Verify that the transporter has a USEPA identification number.

Verify that all waste accepted, transported, or offered for transport is accompanied by a manifest.

Verify that prior to transport, the transporter signs and dates the manifest and returns a copy to the generator prior to leaving the facility.

Verify that the transporter retains a copy of the manifest after delivery.

Verify that manifests are kept on file for 3 yr.

(NOTE: Special issues involved in the transportation of hazardous waste by rail or water are not addressed in this handbook.)

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-92.</b> Before transporting hazardous waste or offering hazardous waste for transportation offsite in the United States, the facility must package and label the waste in accordance with DOT regulations contained in 49 CFR 172, 173, 178, and 179 (40 CFR 262.30 through 262.33).</p>	<p>Determine what pretransport procedures for hazardous waste are used.</p> <p>Verify that containers are properly constructed and contain no leaks, corrosion, or bulges by inspecting a sample of containers awaiting transport.</p> <p>Examine end-seams for minor weeping that indicates drum failure.</p> <p>Verify labeling and marking on each container is compatible with the manifests.</p> <p>Verify that the following information is displayed on a random sample of containers of 110 gal [416.40 L] or less in accordance with 49 CFR 172.304:</p> <p><i>HAZARDOUS WASTE Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.</i></p> <ul style="list-style-type: none"> <li>- Generator's name and address</li> <li>- Manifest Document Number_____.</li> </ul> <p>Verify that proper DOT placarding is available for the transporter.</p>
<p><b>4-93.</b> Transporters of waste offsite must take immediate notification and cleanup action if a discharge occurs during transport (40 CFR 263.30 and 263.31).</p>	<p>Verify that transport operators have instructions to notify local authorities and take clean-up action so that the discharge does not present a hazard.</p> <p>Verify that transporters give notice to the NRC and report in writing as required by 49 CFR 171.15 and 171.16.</p>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-94.</b> The facility should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with good management practices to help prevent spills, releases, and accidents (GMP).</p> <p><b>4-95.</b> Transporters must not store manifested shipments in containers meeting DOT packaging requirements for more than 10 days at a transfer facility (40 CFR 263.12).</p>	<p>Determine if procedures exist to manage movement of hazardous wastes throughout the facility.</p> <p>Determine if drivers are trained in spill control procedures.</p> <p>Determine if provisions have been made for securing wastes in vehicles when transporting.</p> <p>Determine if the facility has a transfer facility.</p> <p>Verify the following:</p> <ul style="list-style-type: none"> <li>- transfer facility storage is for 10 days or less</li> <li>- DOT packaging requirements are met</li> <li>- shipments are manifested and manifests accompany shipments</li> <li>- storage is consistent with good management practice.</li> </ul> <p>(NOTE: Storage for more than 10 days will require a TSDF permit.)</p>



**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL TSDFs</b></p> <p><b>General</b></p> <p><b>4-96.</b> All permitted facilities are required to meet the hazardous waste management requirements outlined in their permit (40 CFR 270.10 and 270.30 through 270.33).</p> <p><b>4-97.</b> All TSDF which have Interim Status are required to meet the hazardous waste management requirements of 40 CFR 265 and apply for a Part B permit (40 CFR 270.71 and 279.73(g)).</p> <p><b>4-98.</b> All TSDF that store, treat, transport, or handle hazardous wastes must obtain an USEPA identification number (40 CFR 264.11 and 265.11).</p>	<p>Verify that the facility is not treating, storing, or disposing of waste other than those listed in their Part A Application, Part A permit, or Part B Permit.</p> <p>Verify that the facility is meeting the requirements outlined in the permit for the following:</p> <ul style="list-style-type: none"> <li>- reporting and recordkeeping</li> <li>- compliance schedules</li> <li>- allowable wastes</li> <li>- allowable activities.</li> </ul> <p>Determine if the facility is an Interim Status facility.</p> <p>Verify that the facility is only treating, storing, or disposing of wastes listed in their Part A application.</p> <p>Verify that the facility is meeting all the requirements for Interim Status facilities outlined in 40 CFR 265.</p> <p>Verify that the facility has submitted a Part B permit application.</p> <p>Examine documentation from the USEPA for the facility's generator, transporter, or TSDF identification number.</p> <p>Verify that the correct identification number is used on all appropriate documentation (i.e., manifests).</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-99.</b> Facilities with TSDFs must control entry to the active portion of each facility (40 CFR 264.14 and 265.14).</p>	<p>Inspect each TSDF on the facility.</p> <p>Verify that unless the facility can demonstrate that physical contact with the waste, structures, and equipment within the active portion of the facility will not injure unknowing or unauthorized person or livestock, and that the waste would not be disturbed, the following items are in place at the facility:</p> <ul style="list-style-type: none"> <li>- a 24-h surveillance system (e.g., television monitors, surveillance by guards) is in place and in operation</li> <li>- the facility is surrounded by a fence or natural barrier and controlled entry is provided (an attendant, television monitors, locked entrances controlled roadway access)</li> <li>- signs with the wording DANGER UNAUTHORIZED PERSONNEL KEEP OUT, are posted at each entrance and other locations as appropriate</li> <li>- signs are legible from 25 ft [7.62 m].</li> </ul> <p>(NOTE: These requirements are satisfied if the facility in which the active portion is located has a surveillance system, or a barrier and means to control entry.)</p>
<p><b>4-100.</b> All TSDF must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 264.30 through 264.37 and 265.30 through 265.37).</p>	<p>Determine if the following required equipment is easily accessible and in working condition by inspecting the TSDF:</p> <ul style="list-style-type: none"> <li>- an internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- a telephone or hand-held two way radio</li> <li>- portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- spill control equipment</li> <li>- decontamination equipment</li> <li>- fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency.</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation.</p> <p>Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations unless they have declined such an arrangement.</p> <p>Verify that the hospital is familiar with the properties of hazardous waste handled and the types of injuries that could result in an emergency.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-100. (continued)</b></p> <p><b>4-101.</b> All TSDf must take precautions to prevent accidental ignition or reaction of ignitable or reactive wastes (40 CFR 264.17(a) and 265.17(a)).</p> <p><b>4-102.</b> When TSDf are required by specific treatment, storage, or disposal sections to prevent reactions from ignitable, reactive, or incompatible wastes, specific standards must be met (40 CFR 264.17 (b) and 265.17(b)).</p> <p><b>4-103.</b> A detailed chemical and physical analysis of a representative sample, as specified in the waste analysis plan, of the hazardous waste must be obtained prior to treatment, storage or disposal (40 CFR 264.13(a) and 265.13 (a)).</p>	<p>(NOTE: When state or local police, fire departments, emergency response teams, or hospitals decline to enter into arrangements, than the refusal must be documented.)</p> <p>Verify from the operating record and/or observation that the following safe management practices are used:</p> <ul style="list-style-type: none"> <li>- wastes are separated and protected from sources of ignition or reaction</li> <li>- smoking and open flame is confined to specially designated locations when ignitable or reactive wastes is handled</li> <li>- NO SMOKING signs are used when necessary.</li> </ul> <p>Verify from the operating record and/or observation that during treatment, storage, or disposal of ignitable or reactive wastes, or during mixing of incompatible wastes and other materials, precautions are taken to prevent the following reactions:</p> <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases sufficient to threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases sufficient to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility</li> <li>- threats to human health or the environment through other like means.</li> </ul> <p>Verify that a detailed physical and chemical analysis is done of a representative sample of the wastes prior to treatment, storage, or disposal.</p> <p>(NOTE: Prior studies, published information may be included as a part of the analysis.)</p> <p>Verify that the analysis is repeated as necessary to ensure that it is accurate and up to date, specifically when the process or operation generating the waste has changed.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-104.</b> Each TSDF must have an emergency coordinator on the facility premises or on call at all times (40 CFR 264.55 and 265.55).</p> <p><b>4-105.</b> TSDF emergency coordinators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 264.56(a) through 264.56(i) and 265.56(a) through 265.56(i)).</p>	<p>Verify that, at all times, there is at least one employee at the facility or on call with responsibility for coordinating all emergency response measures.</p> <p>Verify that the emergency coordinator is thoroughly familiar with the facility, the characteristics of the waste handled, and the provisions of the contingency plan. In addition, verify the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan.</p> <p>Review the contingency plan for the TSDF.</p> <p>Verify that the emergency coordinator is required to follow these emergency procedures:</p> <ul style="list-style-type: none"> <li>- immediately activate facility alarms or communication systems and notify appropriate Regional, state, and local response parties</li> <li>- identify the character, exact source, amount, and a real extent of any released materials</li> <li>- assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water, or chemicals used to control fire or explosions, etc.)</li> <li>- stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases</li> <li>- collect and contain the released waste</li> <li>- remove or isolate containers when necessary</li> <li>- monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate</li> <li>- provide for treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or other material</li> <li>- ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed</li> <li>- ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed</li> <li>- notify USEPA and appropriate state and local authorities when cleanup is complete and operation resumes.</li> </ul>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Containers</b></p> <p><b>4-108.</b> Empty containers at TSDFs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p><b>4-109.</b> Containers used to store hazardous waste at TSDFs must be in good condition and not leaking (40 CFR 264.171 and 265.171).</p> <p><b>4-110.</b> Containers used at TSDFs must be made of or lined with materials compatible with the waste stored in them (40 CFR 264.172 and 265.172).</p>	<p>Verify that for containers or inner liners holding hazardous wastes:</p> <ul style="list-style-type: none"> <li>- wastes are removed that can be removed using common practices</li> <li>- no more than 2.5 cm [1 in.] of residue remains</li> <li>- if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains</li> <li>- when the container is greater than 110 gal [416.40 L], no more than 0.3 percent by weight of the total container capacity remains.</li> </ul> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmospheric.</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5 that one of the following is done:</p> <ul style="list-style-type: none"> <li>- it is triple rinsed</li> <li>- it is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- the inner liner is removed.</li> </ul> <p>Verify that containers are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p> <p>Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-111.</b> Containers at TSDFs must be closed during storage and handled in a safe manner (40 CFR 264.173 and 265.173).</p> <p><b>4-112.</b> The handling of incompatible wastes, or incompatible wastes and materials in containers at TSDFs must comply with safe management practices (40 CFR 264.17(b), 264.177, 265.17(b), and 265.177).</p>	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs and look for open funnels).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not:</p> <ul style="list-style-type: none"> <li>- generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- damage the structural integrity of the device or facility by any other like means threaten human health.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Appendix 4-6 should not be placed in the same containers.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.</p>
<p><b>4-113.</b> Containers of hazardous waste at TSDFs should be managed in accordance with good management practices (GMP).</p>	<p>Inspect containers and storage areas to determine the following:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- at least 3 ft [0.91 m] of aisle space is provided between rows of containers.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Container Storage Areas</b></p> <p><b>4-114.</b> Containers at TSDFs should be kept in storage areas designated in the management plan and identified by signs (GMP).</p> <p><b>4-115.</b> Containers holding ignitable or reactive waste must be located 15 m (50 ft) from the property line of a TSDF (40 CFR 264.176 and 265.176).</p> <p><b>4-116.</b> TSDF personnel must conduct weekly inspections of container storage areas (40 CFR 264.174 and 265.174).</p>	<p>Verify that all containers are identified and stored in appropriate</p> <p>(NOTE: Any unidentified contents of solid waste containers and/c. containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>Determine the distance from any storage containers to the property line.</p> <p>(NOTE: This restriction does not apply to SQGs.)</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>Tank Systems</b>  <b>4-117.</b> Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at TSDFs (40 CFR 264.190(a), 264.190(b), 264.193(a), 265.190(a), 265.190(b), and 265.193(a)).  <b>4-118.</b> Secondary containment on tank systems at TSDFs must meet specific requirements (40 CFR 264.190(a), 264.193(b) through 264.193(d), 265.190(a), and 265.193(b) through 265.193(d)).	<p>Verify that the following types of tanks used to store or treat hazardous waste have secondary containment:</p> <ul style="list-style-type: none"> <li>- all new tank systems or components</li> <li>- all existing tank systems used to store or treat USEPA Hazardous Waste Nos F020, F021, F022, F023, F026 and F027</li> <li>- existing tank systems of known documented age that are 15 yr of age</li> <li>- existing tank systems for which the age cannot be documented but is located at a facility that is older than 15 yr.</li> </ul> <p>(NOTE: The following are exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor</li> <li>- tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.)</li> </ul> <p>Verify that secondary containment meets the following criteria:</p> <ul style="list-style-type: none"> <li>- it is designed, installed, and operated to prevent the migration of liquid out of the system</li> <li>- it is capable of detecting and collecting releases and accumulated liquids until removal is possible</li> <li>- it is constructed of or lined with materials compatible with the wastes</li> <li>- it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset</li> <li>- a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time</li> <li>- it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation.</li> </ul> <p>Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-118. (continued)</b>	<p>Verify that secondary containment for tanks includes one or more of the following:</p> <ul style="list-style-type: none"> <li>- it operates at an instrument reading of less than 500 ppm above background</li> <li>- a liner (external to the tank)</li> <li>- a vault</li> <li>- a double-walled tank</li> <li>- an equivalent approved device.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<p><b>4-119. External liners, vaults and double-walled tanks at TSDFs are required to meet specific standards (40 CFR 264.190(a), 264.193(e), 265.190(a), and 265.193 (e)).</b></p>	<p>Verify that external liner systems meet the following requirements:</p> <ul style="list-style-type: none"> <li>- it is designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained</li> <li>- it prevents run-on and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle run-on or infiltration</li> <li>- it is free of cracks or gaps</li> <li>- it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release</li> <li>- capacity is sufficient to contain precipitation from a 25-yr, 24-h rainfall event.</li> </ul> <p>Verify that vault systems meet the following criteria:</p> <ul style="list-style-type: none"> <li>- it will contain 100 percent of the capacity of the largest tank within its boundary</li> <li>- it prevents run-on and infiltration of precipitation unless there is sufficient excess capacity</li> <li>- it is constructed with chemical-resistant water stops at all joints</li> <li>- it has an impermeable interior coating that is compatible</li> <li>- it has a means to protect against the formation of and ignition of vapors within the vault if the waste is ignitable or reactive</li> <li>- it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-119. (continued)</b>	<p>Verify that double-walled tanks meet the following criteria:</p> <ul style="list-style-type: none"> <li>- it is designed as an integral structure so that any release is contained by the outer shell</li> <li>- it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal</li> <li>- it has a built-in continuous leak detection system capable of detecting a release within 24 h.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<p><b>4-120.</b> Tank ancillary equipment at TSDFs must also be provided with secondary containment (40 CFR 264.190(a), 264.193(f), 265.190(a), and 265.193(f)).</p>	<p>Verify that ancillary equipment, except for the following, has secondary containment:</p> <ul style="list-style-type: none"> <li>- aboveground piping that is visually inspected for leaks on a daily basis</li> <li>- welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis</li> <li>- sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis</li> <li>- pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis.</li> </ul> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p>
<p><b>4-121.</b> Tank systems at TSDFs that are required to have secondary containment (see checklist item 4-118) that do not have secondary containment must meet specific requirements (40 CFR 264.190(a), 264.191(a) through 264.191(c), 264.193(i), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).</p>	<p>Verify that tank systems without secondary containment meet the following:</p> <ul style="list-style-type: none"> <li>- for nonenterable underground tanks a leak test is conducted annually</li> <li>- for other than nonenterable underground tanks either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered professional engineer</li> <li>- for ancillary equipment a leak test or other approved integrity assessment at least annually.</li> </ul> <p>Verify that the facility maintains a record of the results of testing and assessments.</p> <p>Verify that tank systems which store or treat materials that become hazardous waste after July 14 July 1986 are assessed within 12 mo after the waste becomes hazardous.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-121. (continued)</b>	(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
<b>4-122.</b> TSDFs with new tank systems must submit to the Regional Administrator a written assessment reviewed and certified by an independent, qualified, registered professional engineer certifying that the tank was installed according to specific standards (40 CFR 264.192 and 265.192).	<p>Determine if the facility TSDF has any new tank systems.</p> <p>Verify that when the tanks are installed they are handled so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance.</p> <p>Verify that the facility keeps on file the written assessments from the individuals required to certify the tank and supervise the facility of the tank.</p>
<b>4-123.</b> Tanks used for hazardous waste treatment or storage at TSDFs must follow certain operating requirements (40 CFR 264.194 and 265.194).	<p>Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment, or containment system) to fail.</p> <p>Verify that appropriate measures are taken to prevent overfill, including:</p> <ul style="list-style-type: none"> <li>- spill prevention controls</li> <li>- overfill prevention controls</li> <li>- maintenance of sufficient freeboard to prevent overtopping by wave, wind action or precipitation for uncovered tanks.</li> </ul>
<b>4-124.</b> Tank systems at TSDFs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 264.198 and 264.199, 265.198, and 265.199).	<p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met:</p> <ul style="list-style-type: none"> <li>- the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met</li> <li>- the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react</li> <li>- the tank system is used solely for emergencies.</li> </ul> <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's <i>Flammable and Combustible Liquids Code</i> are maintained.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-124. (continued)</b>	<p>Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met.</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met.</p>
<b>4-125. Personnel at TSDFs must conduct inspections of tank systems and associated equipment (40 CFR 264.195 and 265.195).</b>	<p>Verify that a schedule and procedure has been developed and is followed to inspect overfill controls at permitted facilities.</p> <p>Determine if the following are inspected at least once a day:</p> <ul style="list-style-type: none"> <li>- data gathered from monitoring and leak detection equipment</li> <li>- overfill/spill control equipment at interim state facilities to ensure it is in good working order</li> <li>- aboveground portions of the tank to detect corrosion or releases</li> <li>- tank monitoring equipment (e.g., pressure and temperature gauges)</li> <li>- area surrounding tank including the secondary containment system for signs of leakage (wet spots, dead vegetation).</li> </ul> <p>Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter.</p> <p>Verify that all sources of impressed current are inspected and/or tested every other month.</p> <p>Verify that inspections are documented.</p>
<b>4-126. Tank systems or secondary containment systems at TSDFs from which there has been a leak or spill or which have been declared unfit for use must be removed from service immediately and specific requirements met (40 CFR 264.196 and 265.196).</b>	<p>Verify that the following steps are taken:</p> <ul style="list-style-type: none"> <li>- the flow or addition of hazardous wastes to the tank is stopped</li> <li>- the hazardous waste is removed from the tank: <ul style="list-style-type: none"> <li>- within 24 h of detection (or other reasonable time as demonstrated by the owner/operator) remove as much waste form the tank as necessary to prevent further release and allow inspection and repair</li> <li>- within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment) remove waste released to secondary containment system</li> </ul> </li> <li>- a visual inspection of the release is done and: <ul style="list-style-type: none"> <li>- action is taken to prevent further migration to soils or surface or groundwater</li> <li>- any visible contamination of soil and surface water is removed and disposed.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-126. (continued)</b>	<p>Verify that notification is made within 24 h for any release to the environment to the Regional Administrator.</p> <p>Verify that a report is submitted within 30 days.</p> <p>(NOTE: Releases of 1 lb or less that are immediately contained and cleaned up are exempt from reporting.)</p> <p>Verify that the tank and/or secondary containment is repaired prior to its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer.</p>
<b>4-127.</b> TSDFs are required to follow specific procedures when closing a tank system (40 CFR 264.197(a), 264.197(b), 265.197(a), and 265.197(b)).	<p>Determine if the facility TSDF has closed any tank systems.</p> <p>Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated.</p> <p>Verify that if it is not possible and/or practicable to remove or decontaminate all soils, the facility closes the tank and performs postclosure care as is required for landfills.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Containment Buildings</b></p> <p><b>4-128.</b> Facilities with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 264.1100 and 265.1100).</p>	<p>(NOTE: According to the <i>Background Information</i> published on page 37221 of the 18 August 1992 edition of the Federal Register, a hazardous waste containment building involves the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit. This is not a building that holds drums or tanks filled with hazardous waste, but a building that holds the hazardous waste itself.)</p> <p>Verify that the containment building meets the following:</p> <ul style="list-style-type: none"> <li>- it is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit</li> <li>- if the unit is used to manage liquids: <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier</li> <li>- there is a liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier</li> <li>- there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> </ul> </li> <li>- it has controls sufficient to prevent fugitive dust emissions</li> <li>- it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-129.</b> Containment buildings are required to be designed according to specific standards (40 CFR 264.1101(a)(1) through 264.1101(a)(2), 264.1101(b), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).</p>	<p>Verify that containment buildings meet the following design standards:</p> <ul style="list-style-type: none"> <li>- it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes</li> <li>- the floor and containment walls, including any required secondary containment system, are designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations</li> <li>- it has sufficient structural strength to prevent collapse or other failure</li> <li>- all surfaces in contact with hazardous wastes are compatible with the wastes</li> <li>- it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit and is appropriate for the chemical and physical characteristics of the waste.</li> </ul> <p>Verify that if the containment building is going to manage hazardous wastes with free liquids or treated with free liquids the following design requirements are also met:</p> <ul style="list-style-type: none"> <li>- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface)</li> <li>- there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier:</li> <li>- the primary barrier is sloped to drain liquids to the associated collection system</li> <li>- liquids and wastes are collected and removed to minimized hydraulic head on the containment system at the earliest practicable time</li> <li>- there is a secondary containment system, including a secondary barrier, designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time</li> <li>- the leak detection component of the secondary containment system meets the following: <ul style="list-style-type: none"> <li>- it is constructed with a bottom slope of 1 percent or more</li> <li>- it is constructed of a granular drainage materials with a hydraulic conductivity of <math>1 \times 10^{-2}</math> cm/s or more and a thickness of 12 in. (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of <math>3 \times 10^{-5}</math> m<sup>2</sup>/s or more</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-129. (continued)</b>	<ul style="list-style-type: none"> <li>- if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building.</li> <li>- the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and by any equipment used.</li> </ul> <p>(NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met:</p> <ul style="list-style-type: none"> <li>- the doors and windows provide an effective barrier again fugitive dust emissions</li> <li>- the unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.)</li> </ul> <p>(NOTE: A containment building can serve as secondary containment systems for tanks within the building if:</p> <ul style="list-style-type: none"> <li>- it meets the requirements of 264.193(d) (see checklist item 4-118)</li> <li>- it meets the requirements of 264.193(b) and 264.193(c)(12) (see checklist item 4-117.)</li> </ul>
<p><b>4-130.</b> Containment buildings are required to be operated according to specific standards (40 CFR 264.1101(a)(3), 264.1101(c)(1), 264.1101(c)(4), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).</p>	<p>Verify that incompatible wastes or treatment reagents are not placed in the building or its secondary containment system if they could cause the unit or the secondary containment system to leak, corrode, or otherwise fail.</p> <p>Verify that the following operational procedures are done:</p> <ul style="list-style-type: none"> <li>- controls and practices are used to ensure the containment of the waste within the building</li> <li>- the primary barrier is maintained so that it is free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier</li> <li>- the level of the stored/treated hazardous waste is maintained so that the height of any containment wall is not exceeded</li> <li>- measures are implemented to prevent the tracking of hazardous waste out of the unit by personnel or equipment used in the handling of the waste</li> <li>- there is a designated area for the decontamination of equipment and collection of rinsate</li> <li>- any collected rinsate is managed as needed according to its constituents.</li> <li>- measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions</li> <li>- particulate collection devices are maintained and operated according to sound air pollution control practices.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-130. (continued)</b>	Verify that data is gathered from monitoring equipment and leak detection equipment and the site is inspected at least once every 7 days and the results recorded in the operating record.
<b>4-131.</b> Containment buildings are required to be certified by a registered professional engineer (40 CFR 264.1101(c)(2) and 265.1101(c)(2)).	Verify that the building has been certified.
<b>4-132.</b> Leaks in containment buildings must be repaired and reported (40 CFR 264.1101(c)(3) and 265.1101(c)(3)).	<p>Verify that if a condition is detected that could lead to a leak or has already caused a leak, it is repaired promptly.</p> <p>Verify that when a leak is discovered:</p> <ul style="list-style-type: none"> <li>- the discovery is recorded in the facility operating record</li> <li>- the portion of the containment building that is affected is removed from service</li> <li>- a cleanup and repair schedule is established</li> <li>- within 7 day the Regional Administrator is notified and within 14 working days written notice is provided to the Regional Administrator</li> <li>- the Regional Administrator is notified upon the completion of all repairs and certification from a registered professional engineer is also submitted.</li> </ul>
<b>4-133.</b> Containment buildings that contain both areas with and without secondary containment must meet specific requirements (40 CFR 264.1101(d) and 265.1101(d)).	<p>Verify that each area is designed and operated according to the appropriate requirements</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment.</p> <p>Verify that a written description is maintained in the facility operating log of operating procedures used to maintain the integrity of areas without secondary containment.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-134.</b> When a containment building is closed specific requirements must be met (40 CFR 264.1102 and 265.1102).</p>	<p>Determine if the facility has closed a containment building recently.</p> <p>Verify that at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated.</p> <p>Verify that the containment building is closed in accordance with closure and postclosure requirements for TSDFs as outlined in the subsections pertaining to all TSDFs titled Documentation Requirements and Closure.</p> <p>Verify that if it is found that not all contaminated subsoils can be practicably removed or decontaminated, the facility is closed and landfill postclosure requirements are implemented.</p>
<p><b>Restricted Wastes</b></p> <p><b>4-135.</b> Facilities must not dispose of the wastes listed in Appendix 4-7 on land unless specific parameters are met (40 CFR 268.1, 268.4, and Appendix VII).</p>	<p>Verify that the wastes listed in Appendix 4-7 are not land disposed after the indicated dates in the Appendix unless:</p> <ul style="list-style-type: none"> <li>- the facility was granted an extension</li> <li>- the waste is hazardous only because it exhibits a hazardous characteristic, and is otherwise prohibited from land disposal, is not prohibited from land disposal if the waste: <ul style="list-style-type: none"> <li>- is disposed of into a nonhazardous or hazardous injection well</li> <li>- does not exhibit any prohibited characteristic of a hazardous waste at the point of injection</li> </ul> </li> <li>- disposal is done in a surface impoundment and: <ul style="list-style-type: none"> <li>- treatment of the wastes occurs at the impoundment</li> <li>- sampling, testing, and removal procedures and design requirements outlined in 40 CFR 268.4 are followed</li> </ul> </li> <li>- the waste is treated.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-135. (continued)</b></p>	<p>(NOTE: The following are exempted from all of the requirements concerning restricted wastes found in 40 CFR 268:</p> <ul style="list-style-type: none"> <li>- waste generated by SQGs of less than 100 kg [220.46 lb] of nonacute hazardous waste or less than 1 kg of acute hazardous waste per month</li> <li>- waste pesticides that a farmer disposes of</li> <li>- wastes identified or listed as hazardous after 8 November 1984 for which USEPA has not promulgated land disposal prohibitions or treatment standards</li> <li>- De minimis losses to wastewater treatment systems of commercial chemical product or chemical intermediates that are ignitable (D001), or corrosive (D002), and that contain underlying hazardous constituents</li> <li>- laboratory wastes displaying the characteristic of ignitability (D001), or corrosivity (D002), that are commingled with other plant wastewaters under designated circumstances</li> <li>- laboratory wastes that are ignitable and corrosive containing underlying hazardous constituents from laboratory operations that are mixed with other plant wastewaters at facilities whose ultimate discharge is subject to CWA regulations, if the annualized flow of laboratory wastewater into the facility's headwork does not exceed one percent or the laboratory wastes combined annualized sewage concentration does not exceed 1 ppm in the facility's headwork.)</li> </ul> <p>(NOTE: As of 8 May 1993, debris that is contaminated with the wastes listed in Appendix 4-7 and debris that is contaminated with any characteristic waste for which there are treatment standards is prohibited from land disposal.)</p>
<p><b>4-136.</b> Wastes that are restricted from land disposal or the residual from the treatment of a waste restricted from land disposal shall not be diluted as a substitute for adequate treatment (40 CFR 268.3).</p>	<p>Verify that restricted wastes or the residual from the treatment of restricted wastes are not diluted unless they are hazardous only because they exhibit a characteristic in a treatment system which treats wastes that are then discharged into a waste of the United States by permit or which treats wastes for the purpose of pretreatment or unless the waste is a D003 reactive cyanide wastewater or nonwastewater.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-137.</b> A restricted waste may be land disposed only if the constituent concentrations in the waste or waste treatment residue meet applicable treatment standards, or if the waste is treated using a specified treatment technology or equivalent treatment method (40 CFR 268.40 through 268.43).</p>	<p>Verify that for restricted wastes identified in Appendix 4-8 that are land disposed, the associated constituent concentrations in the extract of the waste or waste treatment residue do not exceed the values shown in Appendix 4-8.</p> <p>Verify that for restricted wastes listed in Appendix 4-9 that are land disposed, the waste is treated using the treatment technology specified in Appendix 4-9 or an equivalent treatment method approved by the administrator.</p> <p>Verify that for restricted wastes identified in Appendix 4-10 that are land disposed, the associated constituent concentrations in the waste or waste treatment residue do not exceed the values shown in Appendix 4-10.</p> <p>(NOTE: As used in Appendices 4-9, and 4-10, the term wastewater has the following meaning: wastes that contain less than 1 percent by weight total organic carbon (TOC) and less than 1 percent by weight total suspended solids (TSS), with the following exceptions:</p> <ul style="list-style-type: none"> <li>- F001, F002, F003, F004, F005 wastewaters are solvent-water mixtures that contain less than 1 percent by weight TOC or less than 1 percent by weight total F001, F002, F003, F004, F005 solvent constituents listed in Appendix 4-8</li> <li>- K011, K013, K014 wastewaters contain less than 5 percent by weight TOC and less than 1 percent by weight TSS, as generated</li> <li>- K103 and K104 wastewaters contain less than 4 percent by weight TOC and less than 1 percent by weight TSS.)</li> </ul>
<p><b>4-138.</b> Treatment facilities are required to follow specific procedures for restricted wastes (40 CFR 268.7 (b)).</p>	<p>Verify that treatment facilities are testing their waste according to the procedures outlined in their waste analysis plan.</p> <p>Verify that the treatment facility sends a notice with each waste shipment going to a land disposal facility, except for debris excluded from the definitions of hazardous waste, that includes the following:</p> <ul style="list-style-type: none"> <li>- USEPA hazardous waste number</li> <li>- treatment standards</li> <li>- the manifest number associated with the shipment of waste</li> <li>- waste analysis data, where available.</li> </ul> <p>Verify that the treatment facility submits a certification with each shipment of waste or treatment residue of a restricted waste, except for debris excluded from the definitions of a hazardous waste, to the land disposal facility stating that the waste has been treated in compliance with applicable standards.</p> <p>(NOTE: If waste or treatment residues will be further managed at a different treatment or storage facility, the TSDF sending the waste or treatment residue offsite must comply with notice and certification requirements.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-138. (continued)</b></p> <p><b>4-139.</b> Land disposal facilities for restricted wastes are required to maintain copies of notices and certifications and test the waste except when disposing of waste that is recycled material used in a manner constituting disposal (40 CFR 268.7(c)).</p> <p><b>4-140.</b> The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).</p>	<p>(NOTE: Where the wastes are recyclable materials used in a manner constituting disposal, the facility treatment facility is not required to notify the receiving facility.)</p> <p>Verify that copies of the certifications and notification are kept on hand.</p> <p>Verify that the facility is testing waste as specified in the facilities waste analysis plan.</p> <p>Verify that land disposal restricted waste is not stored at the facility unless the TSDF is storing the wastes in tanks, containers, or containment buildings in order to accumulate the necessary quantities for proper recovery, treatment, or disposal, and:</p> <ul style="list-style-type: none"> <li>- each container is marked to identify contents and the date accumulation began</li> <li>- each tank is clearly marked with a description of the contents, the quantity of each hazardous waste received, and the start date of accumulation or a record of such information is maintained.</li> </ul> <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days.</p> <p>(NOTE: A TSDF may store the land disposal restricted wastes for up to 1 yr if they can prove that the reason for storage is to accumulate such quantities of hazardous waste as are necessary to facilitate proper treatment and disposal.)</p> <p>(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)</p> <p>Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a facility that meets the requirements of 40 CFR 761.65(b) (see Special Pollutants Management) and is removed from storage within 1 yr of the date it was first placed into storage.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Emissions From Process Vents</b></p> <p><b>4-141.</b> Facilities with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppmv are required to meet specific standards (40 CFR 264.1030(b), 264.1032, 265.1030 (b), and 265.1032).</p> <p><b>4-142.</b> When a facility uses a closed vent system and control device to meet the standards for total organic emissions, the closed vent system and control device must meet certain minimum requirements (40 CFR 264.1033 and 265.1033)</p>	<p>Verify that one of the following is met:</p> <ul style="list-style-type: none"> <li>- total organic emissions from the process vents do not exceed 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr)</li> <li>- total organic emissions are reduced by use of a control device from all process vents by 95 weight percent.</li> </ul> <p>(NOTE: These standards apply to:</p> <ul style="list-style-type: none"> <li>- TSDFs that are required to have a permit</li> <li>- hazardous waste recycling units that are located on a hazardous waste management facility that is required to have a permit.)</li> </ul> <p>Verify that control devices involving vapor recovery are designed and operated to recovery the organic vapors vented to the air with an efficiency of 95 weight percent or greater unless the total organic emission limit can be attained at an efficiency of less than 95 weight percent.</p> <p>Verify that, if an enclosed combustion device is used (i.e., vapor incinerator, boiler, or process heater), it is designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater, to achieve a total organic compound concentration of 20 ppmv or to provide a minimum residence time of 0.50 s at a minimum temperature of 760 °C.</p> <p>Verify that, if a boiler or process heater is used as the control device, the vent stream is introduced into the flame zone of the boiler or process heater.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-142. (continued)</b></p>	<p>Verify that if flares are used:</p> <ul style="list-style-type: none"> <li>- they are designed and operated with no visible emissions except for periods not in excess of 5 min during any 2 consecutive hours</li> <li>- it is operated with a flame present at all times</li> <li>- it is used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam assisted or air-assisted</li> <li>- that are nonassisted, the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater</li> <li>- that are nonassisted or steam assisted, they have an exit velocity less than 18.3 m/s (60 ft/s) except: <ul style="list-style-type: none"> <li>- when the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1000 Btu/scf) and the exit velocity is equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s).</li> </ul> </li> </ul> <p>Verify that each monitor and control device is inspected on a routine basis.</p>
<p><b>4-143.</b> TSDFs are required to maintain specific records pertaining to process vent emissions (40 CFR 264.1035 and 265.1035).</p>	<p>Verify that the following information is kept in the operating record:</p> <ul style="list-style-type: none"> <li>- an implementation schedule</li> <li>- up-to-date documentation of compliance</li> <li>- the test plan if test data is used to determine the organic removal efficiency or total organic compound concentration achieved by a control device</li> <li>- design documentation</li> <li>- monitoring and inspection results</li> <li>- notations of exceedences.</li> </ul> <p>Verify that records of monitoring operations and inspection information are kept for 3 yr.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Air Emission Standards for Equipment Leaks</b></p> <p><b>4-144.</b> TSDFs with pumps in light liquid service that contain or contacts hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1052, 265.1050 (b), and 265.1052).</p>	<p>Verify that pumps in light liquid service are monitored monthly according to designated reference methods and inspected visually weekly.</p> <p>(NOTE: A leak is detected if there is an instrument reading of 10,000 ppm or greater or if there is an indication of liquid dripping from the pump seal.)</p> <p>Verify that when a leak is detected, the first attempt at repair is made within 5 calendar days and repair is completed within 15 calendar days.</p> <p>(NOTE: Pumps equipped with dual mechanical seal systems and pumps designated for no detectable emissions that meet standards outlined below do not have to be monitored monthly or visually checked weekly.)</p> <p>Verify that pumps equipped with a dual mechanical seal system meet the following design and operation requirements:</p> <ul style="list-style-type: none"> <li>- the dual mechanical seal system is operated with barrier fluid at a pressure that is at all times greater than the pump stuffing box or equipped with a barrier fluid degassing reservoir that is connected by a closed vent system to a control device or equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emission to the atmosphere</li> <li>- the barrier fluid system has no hazardous waste with organic concentrations 10 percent or greater by weight</li> <li>- the barrier fluid system is equipped with a sensor that will detect failure if the seal is broken.</li> <li>- pumps are checked by visual inspection weekly</li> <li>- sensors are checked daily or equipped with an audible alarm that is checked monthly.</li> </ul> <p>Verify that pumps that are designated for no detectable emissions as indicated by an instrument reading of 500 ppm above background or less meet the following:</p> <ul style="list-style-type: none"> <li>- they are operated with no detectable emissions</li> <li>- they are tested for compliance initially upon designation, annually, and at other times as requested by the Regional Administrator.</li> </ul> <p>(NOTE: Any pump that is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device is exempt from these requirements.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-144. (continued)</b>	<p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>
<p><b>4-145. TSDFs with compressors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1053, 265.1050(b), and 265.1053).</b></p>	<p>Verify that each compressor is equipped with a seal system that includes a barrier fluid system and that prevents leakage of total organic emissions to the atmosphere except:</p> <ul style="list-style-type: none"> <li>- if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device</li> <li>- it is designated for no detectable emission and: <ul style="list-style-type: none"> <li>- it operates at an instrument reading of less than 500 ppm above background</li> <li>- is tested for compliance initially upon designation, annually, and at times as requested by the Regional Administrator.</li> </ul> </li> </ul> <p>Verify that compressor seal systems meet one of the following:</p> <ul style="list-style-type: none"> <li>- it is operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure</li> <li>- it is equipped with a barrier fluid system that is connected to a closed-vent system to a control device</li> <li>- it is equipped with a system that purges that barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.</li> </ul> <p>Verify that the barrier fluid is not a hazardous waste with organic concentrations 10 percent or greater by weight.</p> <p>Verify that each barrier fluid system is equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.</p> <p>Verify that each sensor is checked daily or that it is equipped with an audible alarm that is checked monthly.</p> <p>(NOTE: Sensors on compressors located within the boundary of an unmanned site must be checked daily.)</p> <p>Verify that when a leak is detected, the first attempt at repair is made within 5 calendar days and the repair is made within 15 calendar days.</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-146.</b> TSDFs with pressure relief devices in gas/vapor service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1054, 265.1050 (b), and 265.1054).</p>	<p>Verify that, except during pressure releases, each pressure relief device in gas/vapor service is operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background.</p> <p>Verify that if there is a pressure release, the device is returned to a no detectable emission status within 5 calendar days and the device is monitored to ensure compliance.</p> <p>(NOTE: Any pressure relief device that equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device is exempt from these requirements.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>
<p><b>4-147.</b> TSDFs with sampling connecting systems that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1055, 265.1050 (b), and 265.1055).</p>	<p>Verify that each sampling connection system is equipped with a closed purge system or closed-vent system.</p> <p>Verify that each closed purge system or closed-vent system does one of the following:</p> <ul style="list-style-type: none"> <li>- returns the purged hazardous waste stream directly to the hazardous waste management process line with no detectable emissions to atmosphere</li> <li>- collects and recycles the purged hazardous waste stream with no detectable emissions to the atmosphere</li> <li>- is designed and operated to capture and transport all the purged hazardous waste stream to a control device.</li> </ul> <p>(NOTE: <i>In-situ</i> sampling systems are exempt from these requirements.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-148.</b> TSDFs with open-ended valves or lines that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1056, 265.1050(b), and 265.1056).</p>	<p>Verify that each open-ended valve or line is equipped with a cap, blind flange, plug, or a second valve.</p> <p>Verify that the cap, blind flange, plug, or second valve seals the open end at all times except during operations requiring hazardous waste stream flow through the open-ended valve of line.</p> <p>Verify that each open-ended valve of line equipped with a second valve is operated so that the valve on the hazardous waste stream end is closed before the second valve is closed.</p> <p>Verify that when a double block and bleed system is being used, the bleed valve is shut or plugged except during operations that require venting the line between the block valves.</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>
<p><b>4-149.</b> TSDFs with valves in gas/vapor service or light liquid service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1057, 264.1061, 265.1050(b), 265.1057, and 265.1061).</p>	<p>Verify that valves in gas/vapor service or light liquid service are monitored monthly to detect leaks.</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured. But, if a leak is not detected for 2 consecutive months, monitoring may be cut back to quarterly until a leak is detected.)</p> <p>Verify that the first attempt at repairing a leak is done with 5 calendar days after detection and leak repair is completed within 15 days after detection.</p> <p>(NOTE: Valve that are designated for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background do not have to be monitored monthly if:</p> <ul style="list-style-type: none"> <li>- the valve has no external actuating mechanism on contact with the hazardous waste stream</li> <li>- the valve is operated with emission less than 500 ppm above background</li> <li>- the valve is tested initially upon designation, annual, and at the request of the Regional Administrator.)</li> </ul> <p>(NOTE: Valves that are designated as unsafe-to-monitor are exempt from the requirement for monthly monitoring if:</p> <ul style="list-style-type: none"> <li>- the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger</li> <li>- a written monitoring plan is followed that requires monitoring as often as is reasonably practicable during safe-to-monitor times.)</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-149. (continued)</b></p>	<p>(NOTE: Valves that are designated as difficult-to-monitor are exempt from monthly monitoring requirements if:</p> <ul style="list-style-type: none"> <li>- the valve cannot be monitored without elevating the monitoring personnel more than 2 m above a support surface</li> <li>- the hazardous waste management unit within which the valve is located was in operation before 21 June 1990</li> <li>- a written monitoring plan is followed that requires the monitoring of the valve at least once per calendar year.)</li> </ul> <p>(NOTE: The facility may elect to have all valves within a hazardous waste management unit comply with an alternative standard of no greater than 2 percent of the valves to leak.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>
<p><b>4-150.</b> TSDFs with pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service and other connectors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1058, 265.1050(b), and 265.1058).</p>	<p>Verify that pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service and other connectors are required to be monitored within 5 days if evidence of a potential leak is found by visual, olfactory, audible, or other detection method.</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured.)</p> <p>Verify that when a leak is detected the first attempt at repair occurs within 5 days and repair is done within 15 days after discovery.</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-151.</b> TSDFs are required to keep specific records pertaining to the valves, pumps, pressure relief devices, and connecting systems being monitored for leaks and submit certain reports (40 CFR 264.1050(b), 264.1064, 264.1065, 265.1050(b), and 265.1064).</p>	<p>Verify that the following information is maintained in the facility operating record:</p> <ul style="list-style-type: none"> <li>- equipment identification number and hazardous management unit identification</li> <li>- approximate locations</li> <li>- type of equipment</li> <li>- percent-by-weight total organics in the hazardous waste stream at the equipment</li> <li>- hazardous waste state at the equipment (gas, liquid, vapor)</li> <li>- method of compliance</li> <li>- implementation schedule if needed</li> <li>- a performance plan for control devices as needed</li> <li>- documentation of compliance</li> <li>- documentation of repair.</li> </ul> <p>Verify that permitted TSDFs submit a semiannual report indicating leaks and repairs to the Regional Administrator.</p> <p>(NOTE: If repairs are made and the control device does not exceed or operate outside of the design specifications for more than 24 h a report to the Regional Administrator is not required.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Documentation Requirements</b></p> <p><b>4-152.</b> Facilities that treat, store, or dispose of hazardous wastes must develop and follow a written waste analysis plan (40 CFR 264.13(b), 264.13(c), 265.13(b), and 265.13(c)).</p> <p><b>4-153.</b> TSDFs on the facility must have formal written inspection schedule and a log of inspection results (40 CFR 264.15 and 265.15).</p>	<p>Determine if the facility treats, stores, or disposes of hazardous waste.</p> <p>Verify that the facility has a waste analysis plan.</p> <p>Verify that the facility is following the waste analysis plan by comparing the plan and records of actual procedures.</p> <p>Verify that the waste analysis plan contains the following:</p> <ul style="list-style-type: none"> <li>- testing parameters for which each hazardous waste will be analyzed</li> <li>- test methods</li> <li>- sampling methods used to obtain a representative sample</li> <li>- frequency in which the analysis will be reviewed or repeated to ensure that the analysis is up-to-date and accurate</li> <li>- waste analysis supplied by offsite generators</li> <li>- methods used to meet the additional analysis requirements for management of ignitable, reactive, or incompatible materials, bulk and containerized liquids, and incineration are stated (if applicable)</li> <li>- additional information as follows for offsite facilities: <ul style="list-style-type: none"> <li>- specific procedures to inspect (and analyze if necessary) each movement of hazardous waste received to ensure that it matches the identity of the waste designated in the manifest</li> <li>- the method of sampling used to obtain a representative sample (if the identification method includes sampling)</li> <li>- the procedures that an offsite landfill receiving containerized hazardous waste will use to determine if a hazardous waste generator or treater has added a biodegradable sorbent to the waste in the container.</li> </ul> </li> </ul> <p>Verify that the facility has a formal written inspection schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards.</p> <p>Verify that the schedule is kept at the facility and lists types of problems to be looked for at the facility.</p> <p>Verify that areas subject to spills, such as loading and unloading areas, are inspected daily when in use.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-153. (continued)</b>	<p>Verify that logs, or records, of the inspections are kept for 3 yr and include the following:</p> <ul style="list-style-type: none"> <li>- the date and time of the inspection</li> <li>- the name of the inspector</li> <li>- a notation of the observations made</li> <li>- the date and nature of any repairs or other remedial actions.</li> </ul>
<b>4-154. Facilities with TSDFs must have a contingency plan (40 CFR 264.50 through 264.54 and 265.50 through 265.54).</b>	<p>(NOTE: TSDFs may be addressed in the facility's SPCC plan or other emergency plan, or if none exists, in a separate contingency plan.)</p> <p>Verify that the contingency plan is designed to minimize hazards to human health or the environmental from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents.</p> <p>Verify that the plan includes the following:</p> <ul style="list-style-type: none"> <li>- a description of actions to be taken during an emergency</li> <li>- a description of arrangements, as appropriate, agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams</li> <li>- names, addresses, and phone numbers of all persons qualified to act as emergency coordinator</li> <li>- a list of all emergency equipment at the facility and where this equipment is required, located, and what it looks like an evacuation plan for facility personnel where there is a possibility evacuation would be needed.</li> </ul> <p>Verify that copies of the contingency plan are maintained at the TSDF and also have been submitted to organizations which may be called upon to provide emergency services.</p> <p>Verify that the contingency plan is routinely reviewed and updated, especially when the facility is issued a new permit, the plan fails in an emergency, the emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-155.</b> TSDF operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 264.56(j) and 265.56 (j)).</p> <p><b>4-156.</b> TSDF operators must keep written operating records at the facility (40 CFR 264.73 through 264.74, and 265.73 through 265.74).</p>	<p>Determine if incidents have been recorded and corrective actions taken through a review of TSDF operating records.</p> <p>Verify that written reports have been submitted to the USEPA regional administrator within 15 days after the incident.</p> <p>Verify that the facility has a written operating record.</p> <p>Determine if the operating record includes:</p> <ul style="list-style-type: none"> <li>- a description and quantity of each hazardous waste received at the facility and the method(s) and date(s) of treatment, storage, or disposal of each waste received at the facility</li> <li>- the location of each hazardous waste within the facility (cross-referenced to specific manifest document numbers and the quantity at each location)</li> <li>- for disposal facilities, the location and quantity is recorded on a map or diagram of each cell or disposal area</li> <li>- records and results of waste analyses</li> <li>- reports of all the incidents that required the implementation of the contingency plan</li> <li>- records and results of inspections (only a 4-yr retention period)</li> <li>- monitoring, testing, and analytical data (where required)</li> <li>- for offsite facilities, notices to the generator</li> <li>- annual certification that the facility has a program in place to reduce the volume and toxicity of hazardous waste, and that the proposed method of treatment, storage, or disposal minimizes the present and future threat to human health and the environment</li> <li>- the record of the quantities and date of placement for each shipment of hazardous waste placed in land disposal units under extension granted by 40 CFR 268.5, a petition granted under 40 CFR 268.6, or a certification granted under 40 CFR 268.8</li> <li>- a copy of the applicable notice, demonstration, and certification required for any restricted hazardous wastes</li> <li>- certifications and demonstrations provided to generators or received from generators.</li> </ul> <p>(NOTE: This information must be recorded and maintained in the operating record until closure of the facility.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-156. (continued)</b></p>	<p>(NOTE: The retention period for all records is extended automatically during the course of any unresolved enforcement action or as required by the USEPA Administrator.)</p>
<p><b>4-157.</b> Facilities with TSDFs must prepare and submit a single copy of a biennial report to the USEPA Regional Administrator by March 1 of each even numbered year (40 CFR 264.75 and 265.75).</p>	<p>Obtain a copy of the biennial report (USEPA Form 8700-13D or applicable state form).</p> <p>Verify that biennial reports are prepared and submitted and contain the following information:</p> <ul style="list-style-type: none"> <li>- USEPA identification number</li> <li>- facility name and address</li> <li>- calendar year covered by report</li> <li>- description and quantity of each waste received</li> <li>- method of treatment, storage, or disposal for each waste</li> <li>- certification signed by owner or operator of the facility</li> <li>- offsite facilities must also report USEPA identification number for each hazardous waste generator from which waste was received</li> <li>- description of efforts undertaken during the year to reduce the volume and toxicity of waste generated</li> <li>- description of changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent that information is available for the years prior to 1984.</li> </ul> <p>(NOTE: This is not required if annual or biennial reports are submitted to the state.)</p>
<p><b>4-158.</b> Facilities with TSDFs must have a written closure plan for each facility (40 CFR 264.110, 264.112(a), 264.112(b), 265.110, 265.112(a), and 265.112(b)).</p>	<p>Determine if the facility has a written closure plan.</p> <p>Determine, by review, if the closure plan addresses:</p> <ul style="list-style-type: none"> <li>- how the facility will be closed</li> <li>- estimates of the maximum amount of wastes in storage and in treatment during the life of the facility</li> <li>- description of decontamination procedures to be used during closure</li> <li>- schedule for closure of each unit.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-159.</b> Facilities with hazardous waste disposal units are required to have a written post-closure plan (40 CFR 264.118 and 265.118(a) through 265.118(d)).</p> <p><b>4-160.</b> Facilities that have TSDFs that receive waste from off-site sources must comply with manifest requirements (40 CFR 264.70, 264.71, 265.70 and 265.71).</p>	<p>Verify that the plan includes the following information:</p> <ul style="list-style-type: none"> <li>- identifies the activities that will be carried on after closure of each disposal unit and the frequency of these activities</li> <li>- name address and phone number of the person or office to contact during postclosure care.</li> </ul> <p>Verify that the plan is amended if there is a change in the expected year of final closure, events occur during the life of the facility that impact closure care, or a change in facility design.</p> <p>Determine if the facility receives waste from offsite sources and if their permit allows for the receipt of offsite waste.</p> <p>Determine if manifests contain the following by reviewing a random number of manifests:</p> <ul style="list-style-type: none"> <li>- proper signature</li> <li>- date of receipt.</li> </ul> <p>Verify that a copy was sent to the generator within 30 days of receipt of waste.</p> <p>Verify that copies are retained at the facility for 3 yr.</p> <p>Verify that exclusion certification from very small quantity generators are kept on file.</p> <p>(NOTE: Periods of retention of records are extended automatically during the course of any unresolved enforcement action or as requested by the USEPA Administrator.)</p>
<p><b>4-161.</b> TSDFs receiving hazardous waste from a foreign source must notify the Regional Administrator (40 CFR 264.12(a) and 265.12(a)).</p>	<p>Verify that notification is sent in writing at least 4 weeks before delivery is expected.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-162.</b> Facilities with TSDFs which receive waste from offsite sources are required to attempt to resolve manifest discrepancies when they occur (40 CFR 264.72 and 265.72).</p>	<p>Determine if significant discrepancies existed between the quantity or type of waste designated on the manifest or shipping paper, and the quantity or type of waste the facility received.</p> <p>Verify that on discovery of a significant discrepancy, an attempt was made to reconcile the discrepancy with the generator and/or the transporter.</p> <p>Verify that if the discrepancy could not be resolved within 15 days after receipt of the waste, the Regional Administrator was notified by mail and the following was included:</p> <ul style="list-style-type: none"> <li>- a letter describing the discrepancy and the attempts to reconcile it</li> <li>- copy of the manifest or shipping paper at issue.</li> </ul> <p>(NOTE: For bulk waste, variations greater than 10 percent in weight, and for batch waste, any variation in piece count is a significant discrepancy. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper. These discrepancies may only be discovered after waste analysis.)</p>
<p><b>4-163.</b> Reports must be submitted to the USEPA when a facility accepts an unmanifested waste shipment (40 CFR 264.76 and 265.76).</p> <p><b>Surface Impoundments</b></p> <p><b>4-164.</b> Facilities must follow specific restrictions concerning the types of wastes placed in any surface impoundment (40 CFR 264.229, 264.230, 265.229, and 265.230).</p>	<p>Determine if unmanifested shipments have been accepted.</p> <p>Verify that reports (Form 8700-13B) are submitted within 15 days.</p> <p>(NOTE: When small quantities (i.e., waste from CESQGs) are received without certification that the waste is excluded from manifest requirements, an unmanifested waste report should be filed.)</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same surface impoundment unless precautions are taken to prevent:</p> <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire, or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- damage to structural integrity of the device or facility</li> <li>- threats to human health or the environment through other means.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-164. (continued)</b></p>	<p>Verify that ignitable or reactive wastes are not placed in surface impoundments unless the wastes and impoundments satisfy the restrictions in 40 CFR 268 (see checklist items 4-135 through 4-140) and it is treated, rendered or mixed so that it is no longer ignitable or reactive.</p> <p>Verify that and one of the following conditions is met for the surface impoundment:</p> <ul style="list-style-type: none"> <li>- precautions are taken so that the following are prevented: <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire, or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- damage to structural integrity of the device or facility</li> <li>- threats to human health or the environment</li> </ul> </li> <li>- the waste is managed so that it is protected from any materials or conditions which may cause it to ignite or react</li> <li>- the surface impoundment is used only for emergencies.</li> </ul>
<p><b>Waste Piles</b></p> <p><b>4-165.</b> All waste piles containing ignitable or incompatible wastes must follow certain requirements (40 CFR 264.256 and 264.257).</p>	<p>Verify that ignitable wastes are not placed into piles unless the following are met:</p> <ul style="list-style-type: none"> <li>- the waste is treated or rendered, or mixed before or immediately after placement in the pile so that: <ul style="list-style-type: none"> <li>- the waste or mixture no longer meeting the definition of ignitable reactive waste</li> <li>- there is no generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- there is no production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- there is no production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- there is no damage to structural integrity of the device or facility</li> <li>- there is no threat to human health or the environment through other means</li> </ul> </li> <li>- the waste is managed in such a way that it is protected from any material or conditions that may cause it to ignite or react.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-165. (continued)</b></p>	<p>Verify that incompatible wastes are not placed in the same pile and hazardous waste is not piled on the same base where incompatible wastes or materials were previously piled unless the base has been decontaminated, and the following are avoided:</p> <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire, or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- damage to structural integrity of the device or facility</li> <li>- threats to human health or the environment through other means.</li> </ul> <p>Verify that piles of hazardous waste that are incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or surface impoundments are separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.</p>
<p><b>Land Treatment Units</b></p> <p><b>4-166.</b> All land treatment facilities must follow specific guidelines for ignitable or reactive wastes and incompatible wastes (40 CFR 264.281, 264.282, 265.281, and 265.282).</p>	<p>Determine if the facility handles any ignitable or incompatible waste.</p> <p>Verify that ignitable or reactive waste are not land treated unless:</p> <ul style="list-style-type: none"> <li>- the waste is immediately incorporated into the soil so that the resulting mixture no longer meets the definition of ignitable or reactive waste</li> <li>- the following are prevented: <ul style="list-style-type: none"> <li>- generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- damage to structural integrity of the device or facility</li> <li>- threats to human health or the environment through other means.</li> </ul> </li> <li>- the waste is managed in such a way that it is protected from any materials that may cause it to react.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>Hazardous Waste Landfills</b>  <b>4-167.</b> All hazardous waste landfills are required to have a run-on control system, a runoff management system and control the wind dispersal of particulate matter (40 CFR 264.301(g) through 264.301(k) and 265.301(f) through 265.301(i)).	Verify that: <ul style="list-style-type: none"> <li>- the run-on control system has the capacity to prevent flow onto the active portion of the landfill during peak discharge of 25-yr storm</li> <li>- the runoff management system has adequate capacity to collect and control water from a 24-h, 25-yr storm</li> <li>- collection and holding tanks or basins for run-on and runoff control systems are emptied expeditiously after storms</li> <li>- there is adequate control of wind dispersal: no blowing debris</li> <li>- there is adequate cover of waste material.</li> </ul> <p>(NOTE: For permitted facilities, the permit will specify all design and operating practices necessary to ensure compliance.)</p>
<b>Closure</b>  <b>4-168.</b> TSDFs must comply with certain closure schedules (40 CFR 264.113(a) through 264.113(d), 264.114, 265.113(a) through 265.113(d), and 265.114).	Verify that within 90 days after receiving final volume of waste, all hazardous waste has been treated and removed or disposed of onsite in accordance with the closure plan.  Verify that partial and final closure activities are completed in accordance with approved closure plan within 180 days after receiving the final volume of waste.  <p>(NOTE: The Regional Administrator may grant variances on the time period.)</p> <p>(NOTE: During partial and final closure periods all contaminated equipment, structures and soils must be properly disposed of. By removing any hazardous wastes or constituents during closure, the TSDF becomes a hazardous waste generator and is subject to the requirements of 40 CFR 262.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-169.</b> All TSDFs are required to follow certain notification procedures for partial and final closure (40 CFR 264.112(d)(1) and 265.112(d)(1)).</p>	<p>Verify that TSDFs with surface impoundments, waste piles, land treatment or landfill units notify the Regional Administrator:</p> <ul style="list-style-type: none"> <li>- 180 days prior to expected date of beginning closure of 1st unit for interim status TSDFs without an approved closure plan, 60 days with an approved closure plan</li> <li>- 60 days prior to expected date of beginning closure for all permitted facilities.</li> </ul> <p>Verify that TSDFs with only tanks, containers, or incinerator units notify the Regional Administrator within 45 days prior to date of beginning final closure.</p>
<p><b>4-170.</b> Within 60 days of completion of closure of each hazardous waste surface impoundment, waste pile, land treatment, and landfill unit facilities must submit a certification of closure to the Regional Administrator (40 CFR 264.115 and 265.115).</p>	<p>Verify that a certification of closure was sent to the Regional Administrator by registered mail.</p>
<p><b>4-171.</b> By the time that certification of closure has been submitted, facilities are required to submit a survey plat indicating the location and dimensions of landfill cells in relationship to permanently surveyed landmarks to specific authorities (40 CFR 264.116 and 265.116).</p>	<p>Verify that a survey plat was submitted to the local zoning authorities or the authority with jurisdiction over local land use, and the Regional Administrator.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-172.</b> Postclosure care of hazardous waste management units must meet specific parameters (40 CFR 264.117 and 265.117).</p>	<p>Verify that postclosure care last for 30 yr after closure and consists of the following:</p> <ul style="list-style-type: none"> <li>- monitoring and reporting as required in other sections</li> <li>- maintenance of waste containment systems</li> <li>- use of the property is not allowed to disturb the integrity of the final cover, liner, or any other components.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>ADDITIONAL REQUIREMENTS FOR PERMITTED TSDFs</b>  <b>General</b>  <b>4-173.</b> Permitted facilities that receive hazardous waste from offsite sources must inform the generator in writing that the facility has the appropriate permit and will accept the waste (40 CFR 264.12(b)).  <b>4-174.</b> Permitted facilities that treat, store, or dispose of hazardous waste with solid waste management units are required to institute corrective actions as outlined in the permit to protect human health and the environment from releases (40 CFR 264.90(a) and 264.101).	<p>Verify that notification is sent and a copy is kept in the operating record.</p> <p>(NOTE: This applies regardless of when the waste was placed in solid waste management units.)</p> <p>Verify that corrective actions required by the permit are being done.</p> <p>(NOTE: The Regional Administrator may identify the unit as not having to comply with this requirement.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-175.</b> Container storage areas at TSDFs must have a containment system that meets specific standards (40 CFR 264.175(a) and 264.175(b)).</p>	<p>Verify that all container storage areas meet the following criteria:</p> <ul style="list-style-type: none"> <li>- containers are stored on a base that is free from cracks or gaps and is impervious so that leaks, spills, and precipitation are contained</li> <li>- the base is sloped (or otherwise designed) to drain and remove liquids resulting from leaks, spills, or precipitation unless the containers are elevated</li> <li>- spilled or leaked waste and accumulated precipitation is removed in a timely manner</li> <li>- the containment system has adequate capacity to contain 10 percent of the volume of the containers or the volume of the largest container whichever is greater</li> <li>- run-on into the containment system is prevented unless the system has sufficient capacity to contain any run-on that might enter the system in addition to the already required capacity.</li> </ul> <p>(NOTE: If the collected material is a hazardous waste, it must be handled accordingly. If it is discharged through a point source, it is subject to the CWA requirements.)</p>
<p><b>4-176.</b> Containment at permitted TSDFs for containers holding wastes that do not contain free liquids must meet specific criteria which is lesser than that for general containment areas (40 CFR 264.175(c)).</p>	<p>Verify that the following storage area criteria is met:</p> <ul style="list-style-type: none"> <li>- the area is sloped or able to drain and remove liquid resulting from precipitation, or</li> <li>- containers are elevated or protected from contact with accumulated liquid.</li> </ul> <p>(NOTE: Storage areas must have complete containment systems when the containers holding F020, F022, F023, F026, and F027 do not contain free liquids.)</p>
<p><b>4-177.</b> When container storage areas are closed at permitted TSDFs, specific conditions must be met (40 CFR 264.178).</p>	<p>Verify that closure criteria was met:</p> <ul style="list-style-type: none"> <li>- all hazardous waste and residues were removed from the containment system</li> <li>- remaining containers, liners, bases, and soils (containing or contaminated with hazardous waste or hazardous waste residues) were decontaminated or removed</li> <li>- all hazardous wastes (including materials removed from the containment system) were managed appropriately.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-178.</b> Facilities with permitted surface impoundments, waste piles, and land treatment units or landfills that received hazardous waste after 26 July 1982 are required to conduct monitoring and response program under specific circumstances (40 CFR 264.90(a)(2) and 264.91).</p> <p><b>4-179.</b> Facilities with permitted surface impoundments, waste piles, and land treatment units or landfills that received hazardous waste after 26 July 1982 are required to comply with specific concentration limits in the groundwater for hazardous constituents as designated by the Regional Administrator in the permit (40 CFR 264.94).</p>	<p>Verify that whenever hazardous constituents specified in the permit by the Regional Administrator are detected at designated compliance points, a compliance monitoring program is started.</p> <p>Verify that whenever groundwater protection limits are exceeded, a corrective action program is initiated.</p> <p>Verify that whenever hazardous constituents specified in the permit by the Regional Administrator exceed concentration limits under 40 CFR 264.94 (see Appendix 4-11) in groundwater between a designated compliance point and the downgradient facility property boundary a corrective action program or a detection monitoring program is started at the facility.</p> <p>Verify that the facility is meeting the elements of the monitoring and response program specified by the Regional Administrator in the permit.</p> <p>Verify that the concentration of hazardous constituents:</p> <ul style="list-style-type: none"> <li>- do not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit</li> <li>- do not exceed the limits outlined in Appendix 4-11</li> <li>- do not exceed an alternate limit set by the Regional Administrator.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-180.</b> Facilities with permitted surface impoundments, waste piles, and land treatment units or landfills that received hazardous waste after 26 July 1982 and that detect statistically significant evidence of contamination for chemical parameters or hazardous constituents designated in the permit must meet specific requirements (40 CFR 264.98(g)).</p>	<p>Verify that the following steps are taken if there is significant evidence of contamination:</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified in writing within 7 days</li> <li>- the groundwater in all monitoring wells is immediately sampled and analyzed for constituents in Appendix IXIX of 40 CFR 264</li> <li>- sampling is repeated after 1 mo for any compounds detected that are listed in Appendix IX of CFR 264</li> <li>- within 90 days an application for a permit modification is submitted to the Regional Administrator to establish a compliance monitoring program.</li> </ul>
<p><b>4-181.</b> If during a compliance monitoring program the facility determines that the concentration limits listed in 264.94 are being exceeded at any monitoring well at the point of compliance, specific actions are required (40 CFR 264.99(h)).</p>	<p>Verify that the following actions are taken when concentration are exceeded:</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified in writing within 7 days</li> <li>- an application for a permit modification to establish a corrective action program is submitted within 180 days.</li> </ul>
<p><b>4-182.</b> Facilities operating corrective actions programs are required to report semi-annually to the Regional Administrator on their effectiveness (40 CFR 264.100(g)).</p>	<p>Determine if the facility operates a corrective action program.</p> <p>Verify that a semi-annual progress report is sent to the Regional Administrator.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-183.</b> Facilities that are seeking a permit for the treatment, storage, or disposal of hazardous waste must initiate the corrective actions needed to protect human health and the environment from all releases of hazardous waste of constituents from any solid waste management unit, regardless of when the waste was placed in the unit (40 CFR 264.101).</p>	<p>Verify that the corrective actions specified in the permit are being done and the compliance schedule is being met.</p> <p>(NOTE: As a part of the corrective action program the Regional Administrator may designate an area of the facility as a corrective action management unit (CAMU) or a temporary unit (TU).)</p>
<p><b>4-184.</b> All permitted TSDFs are required to document compliance with ignitable, reactive, or incompatible waste management requirements (40 CFR 264.17 (c)).</p>	<p>Verify that compliance documentation is maintained at the facility, and that it is based on published scientific or engineering literature, data from field tests, or the results of the treatment of similar wastes by similar treatment processes or similar operating conditions.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-185.</b> Permitted TSDFs with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppmw are required to submit a semi-annual report concerning process vent emissions (40 CFR 264.1036).</p>	<p>Verify that a semi-annual report is submitted to the Regional Administrator and that it includes the following:</p> <ul style="list-style-type: none"> <li>- the USEPA identification number, name, and address of the facility</li> <li>- dates when the control device exceeded or operated outside of design specification and the exceedences were not corrected within 24 h</li> <li>- dates when a flare operated with visible emissions</li> <li>- the duration and cause of exceedences and corrective measures taken.</li> </ul> <p>(NOTE: If there are no exceedences a report is not required.)</p>
<p><b>Surface Impoundments</b></p> <p><b>4-186.</b> Permitted surface impoundments must be designed according to specific parameters ((40 CFR 264.221(a) and 264.221(g) through 264.221(i)).</p>	<p>Determine if the facility has a permitted surface impoundment.</p> <p>Verify that surface impoundments have a liner for all portions of the impoundment.</p> <p>Verify that the impoundment is designed, construction, maintained, and operated to prevent overtopping, overfilling, wind and wave action, rainfall, run-on, malfunctions of level controllers, alarms and other equipment, and human error.</p> <p>Verify that the impoundment has dikes that are designed and constructed and maintained to prevent massive failure of the dikes.</p> <p>(NOTE: The Regional Administrator will specify in the permit all design and operating practices that are necessary.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-187.</b> New permitted surface impoundments that started construction after 29 January 1992, lateral expansions of permitted surface impoundments which started construction after 29 July 1992, and replacements of existing surface impoundments where reuse started after 29 July 1992 are required to meet specific design and operating criteria (40 CFR 264.19, 264.221(c) through 264.221(f), 264.222, 264.223, and 264.226 (d)).</p>	<p>Verify that the impoundment has two or more liners and a leachate collection and removal system between liners, or the double liner requirement has been waived by the USEPA Regional Administrator.</p> <p>Verify that the liner meets the specifications stated in 40 CFR 264.221(c).</p> <p>Verify that the facility has a construction quality assurance (CQA) program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the facility has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- identification of applicable units and a description of how they will be constructed</li> <li>- identification of key personnel</li> <li>- a description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the Regional Administrator.</p> <p>Verify that these surface impoundments comply with the action leakage rate assigned by the Regional Administrator.</p> <p>Verify that the surface impoundment facility has an approved response action plan prior to the receipt of waste.</p> <p>Verify that the amount of liquid removed from each leak detection system sump is recorded at least once a week during the active life and closure period.</p> <p>Verify that after a final cover is installed, the amount of liquids removed from each leak detection system sump is recorded at least monthly or:</p> <ul style="list-style-type: none"> <li>- if the liquid level in the sump stays below the pump operating level of 2 consecutive months, then the liquid amounts may be recorded quarterly</li> <li>- if the liquid level in the sump stays below the pump operating level for 2 consecutive quarters, then the liquid amounts may be recorded semianually.</li> </ul> <p>(NOTE: Facilities with replacement surface impoundments may be exempt from these requirements if the existing unit was constructed in compliance with the design standards of Sections 3004(o)(1)(A)(i) and (o)(5) of RCRA and there is no reason to believe the liner is not functioning as designed.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-188.</b> Permitted facilities must inspect liners and cover systems during construction and installation of liners (40 CFR 264.226(a)).</p>	<p>(NOTE: This excludes existing portions of surface impoundments exempt from 264.221(a).)</p> <p>Verify that liners and covers are inspected for uniformity, damage, and imperfections.</p>
<p><b>4-189.</b> Facilities must conduct inspections while surface impoundments are in operation (40 CFR 264.226(b)).</p>	<p>Verify that inspections are conducted at least weekly and after storms to detect evidence of the following:</p> <ul style="list-style-type: none"> <li>- deterioration, malfunctions, or improper operation of overtop piping control systems</li> <li>- sudden drops in the level of the impoundment contents</li> <li>- severe erosion or other signs of deterioration in dikes or other containment devices.</li> </ul>
<p><b>4-190.</b> Prior to the issuance of a permit and/or after any period of greater than 6 mo of disuse, the facility must obtain certification from a qualified engineer that surface impoundment dikes have structural integrity (40 CFR 264.226(c)).</p>	<p>Determine if the facility is permitted or if any impoundment has been out of service for 6 mo or more.</p> <p>Verify that the certification of structural integrity includes:</p> <ul style="list-style-type: none"> <li>- verification that the impoundment can withstand the amounts and types of waste it will contain</li> <li>- that the impoundment will not fail due to scouring or piping without dependence on any liner system.</li> </ul>
<p><b>4-191.</b> Facilities must follow specific restrictions concerning the types of wastes placed in permitted surface impoundments (40 CFR 264.231).</p>	<p>Verify that hazardous waste F020, F021, F022, F023, F026, and F027 are not placed in the impoundment unless it is done according to a management plan approved by the Regional Administrator.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-192.</b> Permitted surface impoundments are required to be removed from service under specific circumstances (40 CFR 264.227(a)).</p>	<p>Verify that surface impoundments have been removed from service if any of the following circumstances exist:</p> <ul style="list-style-type: none"> <li>- the level of liquid suddenly drops and the drop is not known to be caused by changes in flow</li> <li>- the dike leaks.</li> </ul>
<p><b>4-193.</b> In order to remove a permitted surface impoundment from service, specific parameters have to be met (40 CFR 264.227(b), 264.227(c), and 264.227(e)).</p>	<p>Verify that when a surface impoundment is removed from service the following requirements are met:</p> <ul style="list-style-type: none"> <li>- the flow or addition of waste is immediately shut off or stopped</li> <li>- surface leakage is immediately contained</li> <li>- leaks are stopped or empty the impoundment</li> <li>- the Regional Administrator is notified within 7 days of problems.</li> </ul> <p>Verify that the contingency plan specifies a procedure for taking a surface impoundment out of service.</p> <p>Verify that if a surface impoundment is removed from service and it is not being repaired, it is closed.</p>
<p><b>4-194.</b> Surface impoundments may not be restored to service unless specific standards are met (40 CFR 264.227(d)).</p>	<p>Verify that prior to being returned to service the following is done:</p> <ul style="list-style-type: none"> <li>- the portion of the impoundment that was failing is repaired</li> <li>- the dike is recertified if the reason for removal from service was faulty dike integrity</li> <li>- liners are correctly installed and operating.</li> </ul>
<p><b>4-195.</b> Facilities that have surface impoundments must follow certain closure and postclosure requirements (40 CFR 264.228(a) and 264.228(b)).</p>	<p>Determine if the facility has closed or plans to close any surface impoundment activities.</p> <p>Verify that at closure the facility does one of the following:</p> <ul style="list-style-type: none"> <li>- removes or decontaminates all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate and manages them as hazardous waste</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-195. (continued)</b>	<ul style="list-style-type: none"> <li>- eliminates the free liquids by removing liquid wastes or solidifying the remaining wastes and water residue; stabilizes remaining wastes to a bearing capacity sufficient to support final cover; and cover the surface impoundment with a final cover designed and constructed to:               <ul style="list-style-type: none"> <li>- provide long-term minimization of the migration of liquids</li> <li>- function with minimum maintenance</li> <li>- promote drainage and minimized erosion or abrasion of the final cover</li> <li>- accommodate settling and subsidence so that the cover's integrity is maintained</li> <li>- have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.</li> </ul> </li> </ul> <p>Verify that if waste residues or contaminated materials are left in place, the facility meets postclosure requirements outlined in 264.117 through 264.120 and:</p> <ul style="list-style-type: none"> <li>- maintains the integrity and effectiveness of the final cover</li> <li>- maintains and monitors the leak detection system</li> <li>- maintains and monitors the groundwater monitoring system</li> <li>- prevents run-on and runoff from eroding or otherwise damaging the final cover.</li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Waste Piles</b></p> <p><b>4-196.</b> Permitted TSDFs that store or treat hazardous waste in waste piles must meet specific design and operating standards (40 CFR 264.250, 264.251(a), 264.251(b), and 264.251(g) through 264.251(k)).</p> <p><b>4-197.</b> Permitted waste piles constructed after 29 January 1992, lateral expansions that started after 29 July 1992, and replacement of existing waste piles where reuse started after 29 July 1992 are required to meet specific design and operating requirements (40 CFR 264.19, 264.251(c) through 264.251(f), 264.252, and 264.253).</p>	<p>(NOTE: Waste piles closed with wastes left in place are regulated as landfills. Waste piles inside or under a protective structure are exempt from the standards in 264.250 through 264.259 if they contain no liquids, are protected from run-on, are designed and operated to control dispersal of waste by wind, and do not generate leachate through decomposition or other reactions.)</p> <p>Determine if the facility treats or stores hazardous waste in waste piles.</p> <p>Verify that the following standards are met for each waste pile:</p> <ul style="list-style-type: none"> <li>- the pile has a liner and is located on a foundation that provides support</li> <li>- the liner is installed to cover all surrounding earth likely to be in contact with the waste or leachate</li> <li>- a leachate collection and removal system is located immediately above the liner</li> <li>- leachate depth over the liner does not exceed 30 cm (1 ft)</li> <li>- protection from wind and run-on is provided</li> <li>- a runoff management system is in place and in operating condition</li> <li>- tanks and basins associated with the run-on and runoff control systems are emptied.</li> </ul> <p>(NOTE: The permit will designate all design and operating practices necessary to ensure that the requirements are satisfied.)</p> <p>Verify that the described waste piles have two or more liners and a leachate collection and removal system above and between the liners.</p> <p>Verify that the liner is designed and constructed of materials to prevent the migration of hazardous constituents into the liner during the active life and postclosure care period.</p> <p>(NOTE: See 40 CFR 264.251(c)(1) and 264.251(c)(2) for details on the design of the liner and the leachate collection system.)</p> <p>Verify that the facility has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-197. (continued)</b>	<p>Verify that the facility has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- identification of applicable units and a description of how they will be constructed</li> <li>- identification of key personnel</li> <li>- a description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the Regional Administrator.</p> <p>Verify that the pumpable liquids in the leak detection sumps are removed to minimize the head on the bottom liner.</p> <p>Verify that the facility is complying with the action leakage rate assigned by the Regional Administrator.</p> <p>Verify that the facility has an approved response action plan prior to the receipt of waste.</p> <p>(NOTE: The Regional Administrator may approve alternative designs or grant a waiver.)</p>
<p><b>4-198. Facilities must conduct inspections of permitted waste piles during construction and while they are in operation (40 CFR 264.254).</b></p>	<p>Verify that if construction of a waste pile is occurring at the facility the following inspections are taking place:</p> <ul style="list-style-type: none"> <li>- liners and cover systems are inspected for uniformity, damage, and imperfection</li> <li>- synthetic liners and covers are inspected for tight seams and joints immediately after construction</li> <li>- soil based and admixed liners and covers are inspected for imperfections.</li> </ul> <p>Verify that the waste pile is inspected at least weekly and after storms to detect evidence of the following:</p> <ul style="list-style-type: none"> <li>- deterioration, malfunctions, or improper operation in run-on and runoff systems</li> <li>- proper functioning of wind dispersal control system</li> <li>- presence of leachate in, and proper functioning of leachate control system.</li> </ul> <p>Verify that the amount of liquids removed from each leak detection system is record at least once a week during the active life and closure period.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-199.</b> Facilities that treat F020, F021, F022, F023, F026, and/or F027 in permitted waste piles are required to follow specific operating procedures (40 CFR 264.259).</p> <p><b>4-200.</b> Facilities that operate permitted waste piles must follow specific requirements for closure and postclosure care (40 CFR 264.258).</p>	<p>Determine if the facility treats F020-F023, F026, or F027.</p> <p>Verify that these wastes are kept in enclosed piles unless the owner/operator has a management plan approved by the Regional Administrator.</p> <p>Verify that at the time of closure all waste residues, contaminated containment system components, subsoils, and structures and equipment contaminated with hazardous waste have been removed or decontaminated.</p> <p>Verify that if all contaminated subsoils cannot be removed or decontaminated practicably the facility is closed and managed according to closure and postclosure care requirements for a landfill.</p> <p>Verify that if the facility has a waste pile that does not comply with the liner requirement and is not exempted from this requirement, they comply with the following:</p> <ul style="list-style-type: none"> <li>- the written closure plan (40 CFR 264.112) addresses the removal of all contaminated substances and a contingency plan if all contamination cannot be removed from the pile</li> <li>- a contingency postclosure plan is prepared for the waste pile and be submitted to the appropriate agency within 90 days after determining the waste pile must be closed.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>Land Treatment Units</b>	
<b>4-201.</b> Facilities with permitted hazardous waste land treatment units must meet certain standards (40 CFR 264.270 through 264.273(f)).	<p>Determine if the facility operates a land treatment facility.</p> <p>Verify that the following standards are met at each permitted hazardous waste land treatment unit:</p> <ul style="list-style-type: none"> <li>- the treatment zone is no more than 1.5 m (5 ft) from the initial soil surface</li> <li>- the treatment zone is more than 1 m (3 ft) above the seasonal high water table</li> <li>- only wastes with hazardous constituents that can be degraded, transformed, or immobilized are placed in the treatment zone</li> <li>- run-on control systems are operated to prevent flow onto the treatment zone during peak discharge from at least a 25-yr storm</li> <li>- tanks and basins associated with the run-on and runoff control systems are emptied or otherwise managed after storms</li> <li>- wind dispersal is controlled.</li> </ul> <p>(NOTE: The Regional Administrator will specify in a permit the exact elements of the treatment program.)</p>
<b>4-202.</b> Facilities must conduct inspections while land treatment facilities are in operation (40 CFR 264.273 (g)).	<p>Verify that the land treatment system is inspected weekly and after storms to detect evidence of:</p> <ul style="list-style-type: none"> <li>- deterioration, malfunctions, or improper operation of run-on and runoff control systems</li> <li>- improper functioning of wind dispersal control measures.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-203.</b> Facilities with food chain crops grown in or on the treatment zone are required to meet specific operational standards (40 CFR 264.276).</p>	<p>Determine if food chain crops are grown in or on the treatment zone.</p> <p>Verify that if food chain crops are grown, only those specified in the permit by the Regional Administrator are being grown.</p> <p>Verify that if cadmium containing wastes are applied to food chain crops in or on treatment zones the following are met:</p> <ul style="list-style-type: none"> <li>- the pH of the waste and soil mixture is 6.5 or greater at the time of application except in cases where the waste contains cadmium at concentrations of 2 mg/kg or less</li> <li>- the annual application of cadmium from waste does not exceed 0.5 kg/hectare on land used for production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food chain crops the annual cadmium does not exceed 0.5 kg/hectare</li> <li>- the cumulative application of cadmium from waste does not exceed 5 kg/hectare if the waste and soil mixture has a pH less than 6.5</li> <li>- if the waste and soil mixture has a pH of 6.5 or greater or is maintained at a pH of 6.5 or greater during crop growth, the cumulative application of cadmium from waste does not exceed 5 kg/ha if soil cation exchange capacity is less than 5 meq/100g; 10 kg/ha if soil cation exchange capacity is 5 to 15 meq/100 g; and 20 kg/ha if soil cation exchange capacity is greater than 15 meq/100 g; or animal feed is the only food chain crop produced.</li> </ul>
<p><b>4-204.</b> Permitted land treatment units must have an unsaturated zone monitoring program (40 CFR 264.278).</p>	<p>Verify that the unsaturated zone monitoring program meets the following:</p> <ul style="list-style-type: none"> <li>- the soil and soil-pore liquid are monitored to determine if hazardous constituents migrate out of the treatment zone</li> <li>- a system is installed that includes soil monitoring using soil cores and soil-pore liquid monitoring using devices such as lysimeters</li> <li>- a background value has been established for each hazardous constituent to be monitored (see permit)</li> <li>- the soil monitoring and soil-pore liquid monitoring is done immediately below the treatment zone</li> <li>- consistent sampling and monitoring procedures are used.</li> </ul> <p>Verify that the contaminants listed in the permit are being monitored.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-204. (continued)</b>	<p>Verify that when it is found that there is a statistically significant increase of hazardous constituents below the treatment zone the following steps are taken:</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified within 7 days in writing</li> <li>- within 90 days a permit application is submitted to the Regional Administrator for a permit modification to modify the operating practices.</li> </ul>
<b>4-205.</b> Land treatment facilities must keep an operating record that includes dates and rates of application (40 CFR 265.279).	<p>Verify that the operating record contains the dates and rates of applications.</p>
<b>4-206.</b> All land treatment facilities are required meet specific closure and postclosure plans (40 CFR 264.280).	<p>Verify that during the closure period the following requirements are met:</p> <ul style="list-style-type: none"> <li>- all operations are continued as necessary to maximize degradation, transformation, or immobilization of hazardous constituents in the treatment zone</li> <li>- runoff is minimized</li> <li>- run-on and runoff management systems are maintained</li> <li>- wind dispersal of hazardous waste is controlled</li> <li>- compliance with food chain crop prohibitions is continued</li> <li>- unsaturated zone monitoring is continued except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone</li> <li>- a vegetative cover is established on the portion of the facility being closed when the cover will not substantially impede degradation, transformation, or immobilization of hazardous constituents.</li> </ul> <p>Verify that when closure is completed, certification by an independent qualified soil scientist or independent registered professional engineer was submitted to the Regional Administrator that the facility has been closed according to the specifications of an approved closure plan.</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-206. (continued)</b></p>	<p>Verify that during the postclosure period:</p> <ul style="list-style-type: none"> <li>- operations are continued to enhance degradation, transformation, and sustain immobilization of hazardous constituents in the treatment zone</li> <li>- a vegetative cover is maintained</li> <li>- run-on control systems are maintained</li> <li>- runoff management systems are maintained</li> <li>- wind dispersal of hazardous waste is controlled</li> <li>- food chain crop prohibitions are met</li> <li>- unsaturated zone monitoring is continued except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone.</li> </ul> <p>(NOTE: The facility may not be required to establish a vegetative cover or meet postclosure requirements if the Regional Administrator finds that the level of hazardous waste constituents in the treatment soil zone does not exceed the background value of those constituents by an amount that is statistically significant.)</p>
<p><b>4-207.</b> Hazardous wastes F020 through F023, F026, and F027 must not be placed in a land treatment facility unless it is done according to an approved management plan for these wastes (40 CFR 264.283).</p>	<p>Verify that these wastes are only place in a land treatment unit according to the requirements of the approved waste management plan.</p>
<p><b>Hazardous Waste Landfills</b></p> <p><b>4-208.</b> Permitted hazardous waste landfills are required to have a liner and a leachate collection and removal system (40 CFR 264.301(a) through 264.301(b)).</p>	<p>Determine if the facility disposes of hazardous wastes in an onsite landfill.</p> <p>Verify that the landfill liner:</p> <ul style="list-style-type: none"> <li>- is designed, constructed, and installed to prevent any migration of waste out of the landfill</li> <li>- is placed on a properly supported base or foundation</li> <li>- is installed to cover all surrounding earth likely to be in contact with the waste.</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-208. (continued)</b>	<p>Verify that the leachate collection and removal system is immediately above the liner and will operate to remove leachate from the landfill.</p> <p>(NOTE: The permit will contain specific design and operating conditions.)</p>
<b>4-209. New landfills on which construction started after 29 January 1992, lateral expansions which started construction after 29 July 1992 and each replacement of an existing landfill that will start reuse after 29 July 1992 are required meet specific design and operating standards (40 CFR 264.19, 264.301(c) through 264.301(f), 264.302, and 264.304).</b>	<p>Determine if the facility has any landfills meeting the stated criteria.</p> <p>Verify that the landfill has two or more liners and a leachate collection and removal system above and between the liners or a waiver of double liner requirement has been obtained from the USEPA Regional Administrator.</p> <p>Verify that the facility has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the facility has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- identification of applicable units and a description of how they will be constructed</li> <li>- identification of key personnel</li> <li>- a description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the Regional Administrator.</p> <p>Verify that the pumpable liquids in the leak detection system sumps are collected and removed to minimize the head on the bottom liner.</p> <p>Verify that surface impoundments subject to these requirements meet the action leakage rate set by the Regional Administrator.</p> <p>Verify that the facility has an approved response action plan before the receipt of waste.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-209. (continued)</b></p>	<p>Verify that if the flow rate into the leak detection system exceeds the action leakage rate for any sump that:</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified within 7 days</li> <li>- a written notification is submitted within 14 days</li> <li>- to the extent practicable, the location, size and cause of any leak is determined</li> <li>- a determination is made as to whether waste receipt should be stopped or restricted</li> <li>- within 30 days after discovery the Regional Administrator is notified of actions taken and actions to be taken</li> <li>- as long as the flow rate in the leak detection systems exceeds the action leakage rate a monthly report is submitted to the Regional Administrator.</li> </ul> <p>(NOTE: These restrictions do not apply if the existing unit was constructed in accordance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of RCRA and there is no reason to believe that the liner is not functioning as designed.)</p>
<p><b>4-210.</b> Hazardous waste landfills are required to be inspected (40 CFR 264.303).</p>	<p>Verify that liners were inspected during construction for overall integrity.</p> <p>Verify that immediately after construction was completed, the following inspections were performed:</p> <ul style="list-style-type: none"> <li>- synthetic liners and covers to ensure tight seams and joints and absence of tears</li> <li>- soil-based and admixed liners for imperfections that may increase impermeability (e.g., cracks and root-holes).</li> </ul> <p>Verify that while a landfill is in operation it is inspected weekly and after storms to detect evidence of the following:</p> <ul style="list-style-type: none"> <li>- deterioration, malfunctions, or improper operations of run-on and runoff control systems</li> <li>- proper functioning of wind dispersal control systems where present</li> <li>- the presence of leachate in and proper functioning of the leachate collection system.</li> </ul> <p>Verify that the amounts of liquids removed from each leak detection sump are recorded at least once a week during the active life of and closure period.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-210. (continued)</b></p>	<p>Verify that after a final cover is installed, the amount of liquids removed from each leak detection system sump is recorded at least monthly or:</p> <ul style="list-style-type: none"> <li>- if the liquid level in the sump stays below the pump operating level for 2 consecutive months than the liquid amounts may be recorded quarterly</li> <li>- if the liquid level in the sump stays below the pump operating level for 2 consecutive quarters than the liquid amounts may be recorded semi-annually.</li> </ul>
<p><b>4-211.</b> Facilities with permitted hazardous waste landfills are required to meet specific standards for hazardous wastes F020, F021, F022, F023, F026, and F027 (40 CFR 264.317).</p>	<p>Determine whether or not these wastes are landfilled at the facility.</p> <p>Verify that if they are landfilled, the facility has a management plan for their disposal that is approved by the Regional Administrator.</p>
<p><b>Permitted Incinerators</b></p> <p><b>4-212.</b> Facilities with permitted hazardous waste incinerators must comply with certain regulations (40 CFR 264.340(a) through 264.340(c), 264.341 through 264.344(a), 264.345, and 264.346).</p>	<p>Determine if the facility incinerates hazardous waste.</p> <p>Determine if specific wastes (Principal Organic Hazardous Constituents (POHC)) are specified in the permit.</p> <p>Verify that only the wastes listed in the permit are burned, and only under the operating conditions set forth in the permit.</p> <p>Verify that sufficient waste analyses are conducted throughout normal operations to verify that waste feed is within the limits specified in the permit.</p> <p>Verify that for each waste specified in the permit, the incinerator achieves a Destruction and Removal Efficiency (DRE) of 99.99 percent.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-212. (continued)</b></p>	<p>Verify that the DRE for all wastes incinerated is determined by the following equation:</p> $DRE = \frac{(W[IN] W[OUT])}{W[IN]} \times 100\%$ <p>- where: W[IN] = mass feed rate of one POHC in the waste stream feeding the incinerator and W [OUT] = mass emissions rate of the same POHC present in the exhaust emissions.)</p> <p>Verify that when USEPA Hazardous Waste Numbers F020-F023, F026, or F027 are incinerated a DRE of 99.9999 percent is achieved and the Regional Administrator is notified of the intent to burn.</p>
<p><b>4-213.</b> Permitted hazardous waste incinerators are required to meet specific emission standards (40 CFR 264.343(b) and 264.343(c)).</p>	<p>Determine if the incinerator produces stack emissions of hydrogen chloride (HCL).</p> <p>Verify that if HCL emissions exceed 1.8 kg/h (4 lb/h), the emissions are controlled so that the rate of emission is no greater than the larger of either 1.8 kg/h (4 lb/h) or 1 percent HCL in the stack gas prior to entering any pollution control equipment.</p> <p>Verify that particulate matter no greater than 180 mg/dscm is emitted.</p>
<p><b>4-214.</b> Operators of incinerators must conduct monitoring while incinerating hazardous waste (40 CFR 264.347).</p>	<p>Verify that the operator monitors, at a minimum, the following at the indicated intervals:</p> <ul style="list-style-type: none"> <li>- waste feed rate, combustion temperature, combustion gas velocity, CO (prior to release): continuously</li> <li>- the incinerator and associated equipment for leaks, spills etc.: daily</li> <li>- the emergency waste feed cutoff system and associated emergency cutoff alarms: weekly.</li> </ul> <p>Verify that monitoring and inspection data is recorded and the records placed in the operating log.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-215.</b> When permitted hazardous waste incinerators are closed all hazardous waste and hazardous waste residues must be removed (40 CFR 264.351).</p> <p><b>Miscellaneous Units</b></p> <p><b>4-216.</b> Facilities that treat, store, or dispose of hazardous wastes in permitted miscellaneous units must comply with specific environmental performance standard requirements (40 CFR 264.601).</p>	<p>Verify that all hazardous wastes and hazardous waste residues, including ash, scrubber waters, and scrubber sludges are removed from the incinerator site.</p> <p>(NOTE: The open burning/open detonation (OB/OD) of waste explosives at permitted TSDFs is done under the classification of miscellaneous unit. This is also sometimes referred to as a Subpart X Permit.)</p> <p>Determine whether the facility treats, stores, or disposes of any hazardous waste in miscellaneous units.</p> <p>Verify that miscellaneous units are located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment including:</p> <ul style="list-style-type: none"> <li>- prevention of any release due to migration in the surface water, wetlands, or the soil surface, taking in to consideration: <ul style="list-style-type: none"> <li>- volume and physical and chemical characteristics of the waste in the unit</li> <li>- the effectiveness of containing, confining, and collection systems and structures in preventing migration</li> <li>- the hydrologic characteristics of the unit and surrounding area, including the topography of the land around the unit</li> <li>- regional patterns of precipitation</li> <li>- existing quality, quantity, and direction of groundwater flow</li> <li>- the proximity of the unit to surface waters</li> <li>- the current and potential uses of nearby surface waters and any water quality standards established for those surface waters</li> <li>- the existing quality of surface waters and surface soils including other sources of contamination and their cumulative impact</li> <li>- regional pattern of land use</li> <li>- potential health risks caused by human exposure to the waste</li> <li>- potential for damage from exposure to domestic animals, wildlife, crops, vegetation, and physical structures.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-216. (continued)</b></p>	<ul style="list-style-type: none"> <li>- prevention of any release that may have adverse affects on human health or the environment due to migration of waste constituents in the groundwater or subsurface environment, taking in to consideration:               <ul style="list-style-type: none"> <li>- volume and physical and chemical characteristics of waste including its potential for migration through soil, liners, or other containing structures</li> <li>- the hydrological and geological, characteristics of the unit and surrounding area</li> <li>- existing quality of groundwater including other sources of contamination and their cumulative impact on the groundwater</li> <li>- the quantity and direction of groundwater flow</li> <li>- proximity to and withdrawal rates of current and potential groundwater users</li> <li>- regional pattern of land use</li> <li>- potential for deposition or migration of waste into subsurface physical structures, and the root zone of food-chain crops and other vegetation</li> <li>- potential health risks caused by human exposure to the waste</li> <li>- potential for damage from exposure to domestic animals, wildlife, crops, vegetation, and physical structures.</li> </ul> </li> </ul> <p>Verify that miscellaneous units are designed and operated according to their permit restrictions.</p>
<p><b>4-217. Facilities that treat, store, or dispose of hazardous wastes in permitted miscellaneous units must comply with monitoring, analysis, inspection, responses, reporting, and corrective action regulations (40 CFR 264.602).</b></p>	<p>Determine if the facility complies with the following regulations:</p> <ul style="list-style-type: none"> <li>- follow the general inspection requirements of 40 CFR 264.15</li> <li>- test and maintain equipment in compliance with 40 CFR 264.33</li> <li>- prepares a biennial report as specified in 40 CFR 264.75</li> <li>- prepares unmanifested waste reports and additional reports, if applicable, as required in 40 CFR 264.76-77</li> <li>- takes corrective action to prevent releases as defined in 40 CFR 264.101.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-218.</b> A permitted miscellaneous unit that is a disposal unit must be maintained according to the permit requirements during the postclosure period (40 CFR 264.603).</p>	<p>Determine if the facility has a closed miscellaneous unit.</p> <p>Verify that the postclosure requirements specified in the permit are being carried out.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>										
<p><b>ADDITIONAL REQUIREMENTS FOR INTERIM STATUS TSDFs</b></p> <p><b>General</b></p> <p><b>4-219.</b> Interim status TSDFs are allowed to conduct OB/OD of waste explosives under specific conditions (40 CFR 265.382).</p> <p><b>4-220.</b> Interim status TSDFs with a tank system that is used to treat or store a substantially different waste than before or if a substantially different process is used than previously, must conduct waste analysis and trial tests (40 CFR 265.200).</p>	<p>Determine if the facility is conducting OB/OD activities.</p> <p>Verify that the OB/OD occurs at the distance from an adjoining property line indicated in the following chart:</p> <table> <thead> <tr> <th>Pounds of Waste Explosive or propellants</th><th>Minimum distance from OB/OD activity to the property of others</th></tr> </thead> <tbody> <tr> <td>0 to 100</td><td>204 m (670 ft)</td></tr> <tr> <td>101 to 1000</td><td>380 m (1250 ft)</td></tr> <tr> <td>1001 to 10,000</td><td>530 m (1730 ft)</td></tr> <tr> <td>10,000 to 30,000</td><td>690 m (2260 ft)</td></tr> </tbody> </table> <p>Verify that, if the facility has interim status proper waste analysis and trial tests are completed when a tank system is used to treat or store a substantially different waste than before or if a substantially different process is used than previously.</p> <p>Verify that, if similar waste under similar operating conditions is to be treated or stored, written documentation on the waste exists.</p>	Pounds of Waste Explosive or propellants	Minimum distance from OB/OD activity to the property of others	0 to 100	204 m (670 ft)	101 to 1000	380 m (1250 ft)	1001 to 10,000	530 m (1730 ft)	10,000 to 30,000	690 m (2260 ft)
Pounds of Waste Explosive or propellants	Minimum distance from OB/OD activity to the property of others										
0 to 100	204 m (670 ft)										
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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-221.</b> Facilities operating surface impoundments, landfills, or land treatment facilities are required to have a groundwater monitoring program that it can determine the impact of the facility on the uppermost aquifer (40 CFR 265.90(a) through 265.90(c) and 265.90 (e)).</p> <p><b>4-222.</b> Groundwater monitoring systems are required to meet specific standards (40 CFR 265.91).</p>	<p>Verify that unless the facility has demonstrated in writing that there is a low potential for water migration or received a waiver, the facility has a groundwater monitoring program.</p> <p>Verify that the monitoring program is carried out throughout the active life of the facility and also during postclosure for disposal facilities.</p> <p>Verify that the groundwater monitoring system is capable of yielding groundwater samples for analysis.</p> <p>Verify that groundwater monitoring systems consist of the following:</p> <ul style="list-style-type: none"> <li>- monitoring wells, at least three, installed hydraulically downgradient at the limit of the waste management area</li> <li>- monitoring wells, at least one, installed hydraulically upgradient from the limit of the waste management area</li> <li>- an alternate hydraulically downgradient monitoring well location that has been demonstrated in writing to be sufficient.</li> </ul> <p>(NOTE: Separate monitoring systems are not required for each component of a waste management system if the upgradient and downgradient sampling will detect any discharge from the waste management area.)</p>
<p><b>4-223.</b> The facility must gather and analyze samples from the groundwater monitoring system according to a groundwater sampling and analysis plan (40 CFR 265.92).</p>	<p>Verify that the plan includes procedures and techniques for the following:</p> <ul style="list-style-type: none"> <li>- sample collection</li> <li>- sample preservation and shipment</li> <li>- analytical procedures</li> <li>- chain of custody control.</li> </ul> <p>Verify that the facility established initial back groundwater quality.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-223. (continued)</b>	<p>Verify that the concentrations and/or values are determined for the following parameters and samples collected as indicated:</p> <ul style="list-style-type: none"> <li>- parameters characterizing the suitability of groundwater as drinking water as found in Appendix 3 of 40 CFR 265</li> <li>- parameters of chloride, iron, manganese, phenyls, sodium, sulfate: annually</li> <li>- parameters for pH, specific conductance, total organic carbon, total organic halogen: semi-annually.</li> </ul> <p>Verify that the elevation of the groundwater surface is determined each time a sample is obtained.</p>
<p><b>4-224.</b> Facilities with interim status TSDFs must have an outline of a more extensive groundwater quality assessment program (40 CFR 265.93(a)).</p>	<p>Determine if a groundwater quality assessment program outline has been developed.</p> <p>Verify that the program is capable of determining:</p> <ul style="list-style-type: none"> <li>- whether or not hazardous waste or hazardous waste constituents have entered the groundwater</li> <li>- the rate and extent of migration of hazardous waste or hazardous waste constituents in the groundwater</li> <li>- the concentrations of hazardous waste or hazardous waste constituents in the groundwater.</li> </ul>
<p><b>4-225.</b> When there is a significant increase for pH, specific conductance, total organic carbon, or total organic halogen (or pH decrease) in the down-gradient wells the facility must perform specific actions (40 CFR 265.93(c)(2) and 265.93(d)(1) through 265.93(d)(4)).</p>	<p>Verify that additional samples are taken from the wells showing a significant change.</p> <p>Verify that if a significant increase (or pH decrease) is confirmed, written notice is issued to the Regional Administrator within 7 days of the confirmation.</p> <p>Verify that within 15 days after the notification was submitted, the facility submits a groundwater quality assessment program.</p> <p>Verify that the program is implemented.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-226.</b> If an facility is required to have a groundwater assessment program, specific reports must be submitted and actions taken depending on the results of the program (40 CFR 265.93(d)(5) through 265.93(d)(7)).</p>	<p>Verify that the program was implemented as soon as possible and a written report containing an assessment of the water was sent to the Regional Administrator.</p> <p>(NOTE: If the results of the first determinations under the program show that no hazardous waste or hazardous waste constituents have entered the groundwater, the facility can return to its usual practices of monitoring.)</p>
<p><b>4-227.</b> Unless the groundwater is being monitored to satisfy a groundwater assessment program, the facility is required to meet specific reporting and recordkeeping requirements (40 CFR 265.94 (a)).</p>	<p>Verify that records on analyses, groundwater elevations, are kept throughout the life of the facility, and for disposal facilities through post closure.</p> <p>Verify that during the first year of groundwater monitoring the results of parameter monitoring are submitted to the Regional Administrator within 15 days after completing each quarterly analysis.</p> <p>Verify that after the first year, concentrations and values for monitored parameters are reported annually.</p>
<p><b>4-228.</b> When the groundwater is being monitored to satisfy a groundwater assessment program, records have to be maintained of the analyses and annual reported submitted (40 CFR 265.94 (b)).</p>	<p>Verify that records of analyses and evaluations specified in the plan are maintained throughout the active life of the facility, and for disposal facilities throughout postclosure.</p> <p>Verify that the results of the program are submitted annually to the Regional Administrator by 1 March of each calendar year.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Surface Impoundments</b></p> <p><b>4-229.</b> New surface impoundments that started construction after 29 January 1992, lateral expansions of surface impoundments which started construction after 29 July 1992, and replacements of existing surface impoundments where reuse started after 29 July 1992 are required to meet specific design and operating criteria (40 CFR 265.19, 265.221(a) through 265.221(i), 265.222, and 265.223).</p>	<p>Verify that the listed surface impoundments have two liners and a leachate collection and removal system between the liners unless a waiver has been granted by the Regional Administrator.</p> <p>Verify that the facility has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the facility has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- identification of applicable units and a description of how they will be constructed</li> <li>- identification of key personnel</li> <li>- a description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the Regional Administrator.</p> <p>Verify that the Regional Administrator is notified 60 days prior to the receipt of wastes.</p> <p>Verify that facility submitting notice files a Part B application within 6 mo of the receipt of notice.</p> <p>Verify that the facility is complying with the action leakage rate established by the Regional Administrator and if the rate is exceeded by flow into any sump:</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified within 7 days</li> <li>- a written notification is submitted within 14 days</li> <li>- the location, size and cause of any leak is determined to the extent practicable</li> <li>- a determination is made as to whether waste receipt should be stopped or restricted</li> <li>- the Regional Administrator is notified of actions taken and actions to be taken within 30 days after discovery of a leak</li> <li>- a monthly report is submitted to the Regional Administrator as long as the flow rate in the leak detection system exceeds the action leakage rate.</li> </ul> <p>Verify that the facility has an approved response action plan.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-229. (continued)</b>	<p>(NOTE: As of 18 February 1993, surface impoundments that are newly subject to hazardous waste requirements because of new additions or characteristics for the identification of hazardous waste are required to meet the standards outlined above concerning having two or more liners and a leachate collection system.)</p>
<b>4-230.</b> Interim status surface impoundments are required to meet specific operating and containment standards (40 CFR 265.221(f), 265.221(g), 265.223, 265.225, and 265.226).	<p>Verify that there is enough freeboard to prevent any overtopping of the dike by overfilling, wave actions, or a storm.</p> <p>Verify that there is a freeboard of 60 cm (2 ft) unless written certification states that a lesser freeboard is acceptable.</p> <p>Verify that all earthen dikes have a protective cover such as grass, shale, or rock to minimize wind and water erosion and preserve integrity.</p> <p>Verify that the freeboard is inspected at least once each day.</p> <p>Verify that the surface impoundment is inspected at least once a week for signs of deterioration, leaks, or failure.</p> <p>Verify that the amount of liquids removed from each leak detection system sump is recorded at least:</p> <ul style="list-style-type: none"> <li>- once a week during the active life and closure period</li> <li>- monthly after the final cover is installed or:             <ul style="list-style-type: none"> <li>- if the liquid level in the sump stays below the pump operating level of 2 consecutive months than the liquid amounts may be recorded quarterly</li> <li>- if the liquid level in the sump stays below the pump operating level for 2 consecutive quarters than the liquid amounts may be recorded semi-annually.</li> </ul> </li> </ul>
<b>4-231.</b> In specific circumstances additional waste analyses must be done (40 CFR 265.225).	<p>Verify that additional waste analyses are done whenever:</p> <ul style="list-style-type: none"> <li>- the surface impoundment is used to treat a substantially different hazardous waste from what was previously treated</li> <li>- a substantially different process is used to treat the waste.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-232.</b> Specific procedures must be followed during the closure and postclosure periods for an interim status surface impoundment (40 CFR 265.228).</p>	<p>Verify that at closure all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate are removed or decontaminated.</p> <p>Verify that postclosure care includes care equivalent to that for interim status landfills and 40 CFR 265.310, including:</p> <ul style="list-style-type: none"> <li>- elimination of free liquids</li> <li>- stabilization of wastes to a bearing capacity sufficient to support the final cover</li> <li>- covering of surface impoundment</li> <li>- maintenance and monitoring of leak detection system.</li> </ul> <p>Verify that if wastes, waste residues, or contaminated materials remain after closure:</p> <ul style="list-style-type: none"> <li>- the integrity of the final cover is maintained</li> <li>- a groundwater monitoring system is maintained that meets the requirements of 40 CFR 265.90 through 265.94</li> <li>- run-on and runoff are prevented from damaging or eroding the final cover.</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>Waste Piles</b>  <b>4-233.</b> Interim status waste piles are required to meet specific standards for wind protection, waste analysis, and containment (40 CFR 265.250, 265.251, and 265.253).	<p>Determine if the facility operates an interim status waste pile.</p> <p>Verify that interim status waste piles are covered or otherwise managed to prevent dispersal of the pile contents by the wind.</p> <p>Verify that if the leachate or runoff from a pile is a hazardous waste, one of the following is done:</p> <ul style="list-style-type: none"> <li>- Option one:             <ul style="list-style-type: none"> <li>- place the pile on an impermeable base that is compatible with the waste</li> <li>- design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-yr storm</li> <li>- design, construct, operate, and maintain a runoff management system to collect and control at least the water volume resulting from a 24-h, 25-yr storm</li> <li>- empty and manage collection and holding facilities for the run-on and runoff systems</li> </ul> </li> <li>- Option two:             <ul style="list-style-type: none"> <li>- protect the pile from precipitation and run-on</li> <li>- no liquids or wastes containing liquids are placed in the pile.</li> </ul> </li> </ul>
<b>4-234.</b> New interim status piles which start construction after 29 January 1992, lateral expansions of a waste pile unit which started after 29 July 1992, and each such replacement of an existing waste pile unit for which reuse started after 29 July 1992 must meet specific design and operating standards (40 CFR 265.19, 265.254, 265.255, 265.259, and 265.260)	<p>Determine if the facility operates an interim status waste piles meeting the listed description.</p> <p>Verify that the waste pile has two or more liners and a leachate collection and removal system.</p> <p>Verify that the facility has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the facility has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- identification of applicable units and a description of how they will be constructed</li> <li>- identification of key personnel</li> <li>- a description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the Regional Administrator.</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-234. (continued)</b></p>	<p>Verify that waste piles subject to these requirements meet the action leakage rate set by the Regional Administrator.</p> <p>Verify that the facility has an approved response action plan before the receipt of waste.</p> <p>Verify that if the flow rate into the leak detection system exceeds the action leakage rate for any sump:</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified within 7 days</li> <li>- a written notification is submitted within 14 days</li> <li>- the location, size and cause of any leak is determined to the extent practicable</li> <li>- a determination is made as to whether waste receipt should be stopped or restricted</li> <li>- the Regional Administrator is notified of actions taken and actions to be taken within 30 days after discovery of a leak</li> <li>- a monthly report is submitted to the Regional Administrator as long as the flow rate in the leak detection system exceeds the action leakage rate.</li> </ul> <p>Verify that the amount of liquids removed from each leak detection sump is recorded at least once a week during the active life and closure period.</p>
<p><b>4-235.</b> Except in specific instances, facilities are required to analyze a representative sample from each incoming waste before adding the waste to an existing pile (40 CFR 265.252).</p>	<p>Verify that an analysis is performed unless one of the following occurs:</p> <ul style="list-style-type: none"> <li>- the only wastes that the facility receives for piling are compatible</li> <li>- the waste received is compatible with the pile in which it is to be placed.</li> </ul>
<p><b>4-236.</b> Interim status waste piles must meet specific closure and postclosure requirements (40 CFR 265.258).</p>	<p>Verify that at closure all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate are removed or decontaminated.</p> <p>Verify that if all residues cannot be removed, the waste pile is closed, and postclosure care is carried out as for a landfill.</p>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>Land Treatment Units</b>  <b>4-237.</b> Interim status land treatment units are required to be operated according to specific standards (40 CFR 265.270, 265.272, 265.273, and 265.279)	<p>Determine if the facility operates an interim status land treatment unit.</p> <p>Verify that the following standards are met at the land treatment unit:</p> <ul style="list-style-type: none"> <li>- hazardous wastes are not place in or on a land treatment facility unless it can be made less hazardous or nonhazardous by degradation, transformation, or immobilization processes occurring in or on the soil</li> <li>- run-on control systems are operated to prevent flow onto the treatment zone during peak discharge from at least a 25-yr storm</li> <li>- runoff management systems are capable of controlling and collecting a water volume at least equivalent to a 24-h, 25-yr storm</li> <li>- tanks and basins associated with the run-on and runoff control systems are emptied or otherwise managed after storms</li> <li>- wind dispersal is controlled.</li> </ul> <p>Verify that in addition to required waste analysis, prior to placing a hazardous waste in or on a land treatment facility the owner or operator:</p> <ul style="list-style-type: none"> <li>- determines the concentrations in the waste of any substance which equal or exceeded the maximum concentrations contained in Table 1 of 40 CFR 264.21</li> <li>- determine the concentration of any substance which caused the waste to be listed as hazardous</li> <li>- determines the concentrations of arsenic, cadmium, lead, and mercury if food chain crops are grown unless there is documentation present to prove that none of these constituents exist.</li> </ul> <p>Verify that hazardous waste application dates and rates are included in the operating record.</p>
<b>4-238.</b> Facilities are required to operated interim status land treatment facilities where food chain crops are grown according to specific standards (40 CFR 265.276).	<p>Determine if the facility grows food chain crops on their land treatment facilities.</p> <p>Verify that the facility notified the Regional Administrator that food-chain crops were being grown.</p> <p>Verify that food-chain crops are not grown on the facility unless there is proof that the crop will not be contaminated by arsenic, lead, mercury, or other harmful constituents.</p> <p>Verify that if the facility accepts wastes that is contaminated with cadmium, the handling practices outlined in 40 CFR 265.276(c) are followed.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-239.</b> Facilities with interim status land treatment facilities are required to have an unsaturated zone monitoring plan (40 CFR 265.278).</p> <p><b>4-240.</b> Facilities with interim status land treatment facilities are required to meet specific requirements concerning closure and postclosure (40 CFR 265.280).</p>	<p>Verify that the facility has an unsaturated zone monitoring plan that includes:</p> <ul style="list-style-type: none"> <li>- soil monitoring using soil cores</li> <li>- soil-pore water monitoring using devices such as lysimeters</li> <li>- depth and number of samples to be taken.</li> </ul> <p>Verify that the facility is following the plan.</p> <p>Verify that in the closure plan, the facility has addressed the following issues for interim status land treatment facilities:</p> <ul style="list-style-type: none"> <li>- control of migration of wastes</li> <li>- control of the release of contaminated runoff into surface water</li> <li>- control of the release of airborne particulates</li> <li>- compliance with food-chain crop restrictions.</li> </ul> <p>Verify that during closure:</p> <ul style="list-style-type: none"> <li>- unsaturated zone monitoring is continued</li> <li>- the run-on control system is maintained</li> <li>- the runoff management system is maintained</li> <li>- there is continued control of wind dispersal of particulate matter.</li> </ul> <p>Verify that when closure was completed, the facility notified the Regional Administrator.</p> <p>Verify that during postclosure the following is done:</p> <ul style="list-style-type: none"> <li>- soil-core monitoring is continued as specified in the postclosure plan</li> <li>- access to the unit is restricted as appropriate</li> <li>- growth of food chain crops complies with restrictions</li> <li>- wind dispersal of hazardous wastes is controlled.</li> </ul>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Hazardous Waste Landfills</b></p> <p><b>4-241.</b> New interim status landfill units which started construction after 29 January 1992, each lateral expansion of a landfill unit that started construction after 29 July 1992 and each replacement of an existing landfill that will begin reuse after 29 July 1992 is required to meet specific design and operating standards (40 CFR 265.19, 265.301(a) through 265.301(e) and 265.302 through 265.304).</p>	<p>Determine if the facility has any interim status landfills meeting the stated criteria.</p> <p>Verify that the landfill has two or more liners and a leachate collection system above and between the liners OR a waiver of double liner requirement has been obtained from the USEPA Regional Administrator.</p> <p>Verify that the facility has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the facility has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- identification of applicable units and a description of how they will be constructed</li> <li>- identification of key personnel</li> <li>- a description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the Regional Administrator.</p> <p>Verify that the facility notifies the Regional Administrator at least 60 days prior to receiving waste and files a Part B application within 6 mo of the receipt of notice.</p> <p>Verify that landfills subject to these requirements meet the action leakage rate set by the Regional Administrator.</p> <p>Verify that the facility has an approved response action plan before the receipt of waste.</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-241. (continued)</b></p>	<p>Verify that if the flow rate into the leak detection system exceeds the action leakage rate for any sump that:</p> <ul style="list-style-type: none"> <li>- the Regional Administrator is notified within 7 days</li> <li>- a written notification is submitted within 14 days</li> <li>- to the extent practicable, the location, size, and cause of any leak is determined</li> <li>- a determination is made as to whether waste receipt should be stopped or restricted</li> <li>- within 30 after discovery the Regional Administrator is notified of actions taken and actions to be taken</li> <li>- as long as the flow rate in the leak detection systems exceeds the action leakage rate a monthly report is submitted to the Regional Administrator.</li> </ul> <p>Verify that after a final cover is installed, the amount of liquids removed from each leak detection system sump is recorded at least monthly or:</p> <ul style="list-style-type: none"> <li>- if the liquid level in the sump stays below the pump operating level for 2 consecutive months than the liquid amounts may be recorded quarterly</li> <li>- if the liquid level in the sump stays below the pump operating level for 2 consecutive quarters than the liquid amounts may be recorded semiannually.</li> </ul>
<p><b>Incinerators</b></p> <p><b>4-242.</b> Facilities with interim status that use incinerators for hazardous waste must sufficiently analyze all wastes burned (40 CFR 265.340 and 265.341).</p>	<p>Determine if the facility incinerates hazardous wastes.</p> <p>Determine if the results of each waste are kept on file in the operating record.</p> <p>Verify that for each waste not previously burned at the facility, the results of the waste analysis establish:</p> <ul style="list-style-type: none"> <li>- steady state (normal) operating conditions including: <ul style="list-style-type: none"> <li>- waste fuel feed</li> <li>- auxiliary fuel feed</li> <li>- air flow</li> </ul> </li> <li>- type of pollutants that might be emitted</li> <li>- heating value</li> <li>- halogen content</li> <li>- sulfur content</li> <li>- lead concentration level</li> <li>- mercury concentration level.</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-242. (continued)</b>	<p>(NOTE: Facilities with interim status may be exempt from all the requirements for hazardous waste incinerators (except closure) under certain conditions:</p> <ul style="list-style-type: none"> <li>- the facility has written documentation that the wastes they incinerate do not contain any hazardous constituents listed in 40 CFR 261, Appendix VIII</li> <li>- the documentation is retained at the facility</li> <li>- the wastes are listed as hazardous solely because of their ignitable (Hazard Code I) or corrosive (Hazard Code C) properties, or both as listed and determined in 40 CFR 261, part C or D</li> <li>- the wastes are listed as reactive (Hazard Code R) for characteristics other than those listed in 40 CFR 261.23(a)(1),(2), (3), (6), (7), or (8) and will not be burned when other hazardous wastes are present in the combustion zone.)</li> </ul>
<b>4-243.</b> Facilities with interim status may burn F020 through F023, F026, F027 if they have proper certification (40 CFR 265.352).	<p>Determine if the facility burns USEPA hazardous waste numbers F020-F023, F026, or F027.</p> <p>Verify that the facility has received certification from the Assistant Administrator for Solid Waste and Emergency Response if such wastes are burned at the facility.</p>
<b>4-244.</b> Facilities with interim status that incinerate hazardous waste must not feed hazardous waste unless the incinerator is at a steady state (40 CFR 265.345).	<p>Verify that the waste is not fed until steady state conditions are reached by observing the incinerator during startup and shutdown.</p>

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### REGULATORY REQUIREMENTS:

## REVIEWER CHECKS:

**4-245.** An interim status facility that incinerates hazardous waste must conduct monitoring and inspections (40 CFR 265.347).

**4-246.** At closure of an interim status incinerator all hazardous waste and hazardous waste residues must be removed (40 CFR 265.351).

**Verify that the following monitoring and inspection procedures are followed:**

- existing instruments related to combustion and emission are monitored every 15 min including the instruments that control:
  - waste feed
  - auxiliary fuel feed
  - air flow
  - incinerator temperature
  - scrubber flow
  - scrubber pH
- the complete incinerator and associated equipment are monitored at least daily for leaks, spills, and fugitive emissions, including:
  - pumps
  - valves
  - conveyors
  - pipes
  - emergency shutdown controls
  - system alarms.

**Verify that when an interim status hazardous waste incinerator is closed, the wastes and residues are removed.**

- Verify that the following monitoring and inspection procedures are followed:**
- existing instruments related to combustion and emission are monitored every 15 min including the instruments that control:
    - waste feed
    - auxiliary fuel feed
    - air flow
    - incinerator temperature
    - scrubber flow
    - scrubber pH
  - the complete incinerator and associated equipment are monitored at least daily for leaks, spills, and fugitive emissions, including:
    - pumps
    - valves
    - conveyors
    - pipes
    - emergency shutdown controls
    - system alarms.
- Verify that when an interim status hazardous waste incinerator is closed, the wastes and residues are removed.**

**4-246.** At closure of an interim status incinerator all hazardous waste and hazardous waste residues must be removed (40 CFR 265.351).

Verify that when an interim status hazardous waste incinerator is closed, the wastes and residues are removed.

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>Thermal Treatment</b>  <b>4-247.</b> Facilities with interim status thermal treatment facilities must meet specific requirements (40 CFR 265.370, 265.373, 265.375, 265.381, and 265.383).	<p>Determine if the facility operates an interim status thermal treatment facility (other than enclosed devices using controlled flame combustion).</p> <p>Verify that the following requirements are met:</p> <ul style="list-style-type: none"> <li>- the thermal treatment process is operating at steady state (normal) conditions, including temperature, before adding hazardous waste (unless the process is a noncontinuous [batch] process that requires a complete thermal cycle to treat the waste</li> <li>- waste analysis is performed on waste not previously treated at the facility that includes:               <ul style="list-style-type: none"> <li>- establishing steady state (normal) operating condition</li> <li>- type of pollutants which might be emitted</li> <li>- heating value</li> <li>- halogen and sulfur content</li> <li>- concentrations of lead and mercury.</li> </ul> </li> </ul> <p>(NOTE: The open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives.)</p> <p>Verify that if open burning or detonation of waste explosives is conducted, the following standards are met:</p> <ul style="list-style-type: none"> <li>- pounds of waste explosives or propellants determines the minimum distance from open burning or detonation to property of others as shown below:               <ul style="list-style-type: none"> <li>- 0-100: 204m (670 ft)</li> <li>- 101-1000: 380m (1250 ft)</li> <li>- 1001-10,000: 530m (1730 ft)</li> <li>- 10,001-30,000: 690m (2260 ft).</li> </ul> </li> </ul> <p>Verify that at closure all wastes and residues are removed.</p>
<b>4-248.</b> Interim status thermal treatment facilities must be certified, if they treat certain wastes (40 CFR 265.383).	<p>Determine if the facility thermally treats USEPA waste numbers F020 through F023, F026, or F027.</p> <p>Verify that the facility has received certification from the Assistant Administrator for Solid Waste and Emergency Response to burn such wastes.</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-249.</b> Operators of interim status thermal treatment facilities must conduct monitoring and inspections while thermally treating hazardous waste (40 CFR 265.377).</p>	<p>Determine if the operator conducts at a minimum the following monitoring while thermally treating hazardous wastes:</p> <ul style="list-style-type: none"> <li>- every 15 min, the following instrumentation for temperature and emission controls are monitored and appropriate corrections are made immediately <ul style="list-style-type: none"> <li>- waste feed rate</li> <li>- auxiliary fuel rate</li> <li>- treatment process temperature</li> <li>- relevant process flow and level controls</li> </ul> </li> <li>- every hour, stack emissions are visually checked for normal appearance (color and opacity)</li> <li>- every day, the complete thermal treatment process and associated equipment are checked including: <ul style="list-style-type: none"> <li>- pumps, valves, conveyors, pipes, etc, inspected for leaks, spills, and fugitive emissions</li> <li>- emergency shutdown controls and systems alarms are checked for proper operation.</li> </ul> </li> </ul>
<p><b>Chemical/Physical/Biological Treatment</b></p> <p><b>4-250.</b> Facilities with interim status chemical, physical, and biological treatment facilities must meet certain requirements (40 CFR 265.400 through 265.402 and 265.404).</p>	<p>Determine if the facility operates a chemical, physical, or biological treatment facility to treat hazardous wastes.</p> <p>(NOTE: These requirements do not apply to facilities which treat hazardous wastes by chemical, physical, biological methods in other than tanks, surface impoundments, and land treatment units.)</p> <p>Verify that the following criteria are met:</p> <ul style="list-style-type: none"> <li>- wastes or treatment reagents are not placed in treatment process or equipment if they could cause ruptures, leaks, corrosion or other failures</li> <li>- in addition to the analyses required by 40 CFR 265.13, continuously fed systems are equipped with waste feed cutoff or bypass system</li> <li>- waste analyses and treatment tests (e.g., bench scale or pilot plant tests) are performed, or written, documented information is obtained whenever a substantially different waste is treated or a substantially different treatment process is used.</li> </ul> <p>Verify that at closure all wastes and residues are removed.</p>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-251.</b> Facilities with chemical, physical, and biological treatment facilities must conduct regular inspections (40 CFR 265.403).	<p>Determine if the chemical, physical, and biological treatment facility is inspected in accordance with the following:</p> <ul style="list-style-type: none"> <li>- at least daily, discharge control and safety equipment (e.g., waste feed cutoff system, bypass system, drainage systems, and pressure relief systems) to ensure good working order</li> <li>- at least daily, data from monitoring equipment is checked to ensure process is operated in accordance with its design</li> <li>- at least weekly, construction materials of the treatment process or equipment is inspected to detect corrosion, leaks, etc.</li> <li>- at least weekly, construction materials of and the area surrounding dikes or other discharge confinement structures are inspected to detect erosion or signs of leakage (dead vegetation, wet spots, etc.).</li> </ul>
<b>4-252.</b> Facilities with interim status may not place ignitable, reactive, or incompatible waste in a treatment process or equipment unless certain requirements are met (40 CFR 265.405 through 265.406).	<p>Determine whether the facility treats any of these wastes.</p> <p>Verify that any ignitable or reactive waste is treated or mixed in such a way before or immediately after placement in the treatment process so that the resultant material no longer meets the definition for ignitable or reactive wastes and is treated in such a way that it is not exposed to conditions that may cause it to react or ignite.</p> <p>Verify that incompatible wastes are not placed in the same treatment process, equipment, or in unwashed equipment that previously held an incompatible waste.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>CLEANUP SITES</b></p> <p><b>General</b></p> <p><b>4-253.</b> When an facility has a hazardous substance contaminated site which might require CERCLA response actions, a removal site evaluation is required to be done (40 CFR 300.410)</p>	<p>Determine if the facility has a contaminated site which might need to undergo CERCLA response actions.</p> <p>Verify that a removal site evaluation is done as quickly as possible.</p> <p>(NOTE: In response to a petition by potentially affected people, the facility may perform a removal preliminary assessment based on readily available information.)</p> <p>Verify that the removal site evaluation is not terminated until the following is determined:</p> <ul style="list-style-type: none"> <li>- there is no release</li> <li>- the source is neither a vessel or a facility (see definitions)</li> <li>- the releases involves neither a hazardous substance, nor a pollutant that may present an imminent and substantial danger to the public health or welfare</li> <li>- the release is one of the following which is subject to limited response: <ul style="list-style-type: none"> <li>- it is of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found</li> <li>- it is from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures</li> <li>- it is into public or private drinking water supplies due to deterioration of the system of ordinary use</li> </ul> </li> <li>- the amount, quantity, or concentration released does not warrant Federal response</li> <li>- a party responsible for the release, or any other person, is providing appropriate response, and onscene monitoring by the government is not required</li> <li>- the removal site evaluation is completed.</li> </ul> <p>Verify that the results of the removal site evaluation are documented.</p> <p>Verify that if natural resource are or may be injured by the release, state and Federal trustees of the property are notified.</p> <p>(NOTE: The removal site evaluation may indicate that a removal action is not required but that remediation action may be necessary.)</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-254.</b> A remedial site evaluation consists of a remedial preliminary assessment (PA) and a remedial site inspection (SI) (40 CFR 300.420).</p>	<p>Verify that the remedial PA includes the following:</p> <ul style="list-style-type: none"> <li>- a review of existing information about a release such as information on the pathways of exposure, exposure targets and source</li> <li>- offsite reconnaissance as appropriate</li> <li>- onsite reconnaissance as appropriate.</li> </ul> <p>Verify that a remedial PA is done for all site in CERCLA.</p> <p>Verify that a PA report is developed that includes:</p> <ul style="list-style-type: none"> <li>- a description of the release</li> <li>- a description of the probable nature of the release</li> <li>- a recommendation on whether further action is warranted, which lead agency should conduct further action and whether a SI or removal action or both should be undertaken.</li> </ul> <p>Verify that a remedial SI is done in order to:</p> <ul style="list-style-type: none"> <li>- eliminate from further consideration releases that pose no significant threat</li> <li>- determine the potential need for removal action</li> <li>- collect or develop additional data to evaluate the release.</li> </ul> <p>Verify that the remedial SI builds upon information gathered in the remedial PA and involves, as appropriate, both on and offsite field investigatory efforts and sampling.</p> <p>Verify that, prior to conducting field sampling as a part of the SI, a sampling analysis plan is developed.</p> <p>Verify that, upon completion of the remedial SI, a report is generated that includes:</p> <ul style="list-style-type: none"> <li>- a description /history/nature of waste handling</li> <li>- a description of known contaminants</li> <li>- a description of known pathways</li> <li>- an identification and description of human and environmental targets</li> <li>- a recommendation on whether further action is warranted. .</li> </ul>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-255.</b> When a remedial investigation/feasibility study (RI/FS) is done to assess site conditions and evaluate alternatives, specific tasks are required as a part of the RI/FS (40 CFR 300.430(a)(2)).</p> <p><b>4-256.</b> When removal actions are required as a result of the site evaluation, specific actions must be taken (40 CFR 300.415(a) through 300.415(f)).</p>	<p>Verify that the RI/FS includes the following activities:</p> <ul style="list-style-type: none"> <li>- project scoping</li> <li>- data collection</li> <li>- risk assessment</li> <li>- treatability studies</li> <li>- analysis of alternatives.</li> </ul> <p>(NOTE: The requirements listed here do not apply to removal actions taken pursuant to Section 104(b) of CERCLA.)</p> <p>Verify that when it is determined that approval action are appropriate, the actions being as soon as possible.</p> <p>Verify that when there is a planning period of at least 6 mo before onsite activities are initiated, the following are done:</p> <ul style="list-style-type: none"> <li>- an engineering evaluation/cost analysis (EE/CA) or its equivalent is done</li> <li>- sampling and analysis plans are developed if environmental samples are going to be collected.</li> </ul> <p>(NOTE: Examples of removal actions include the following:</p> <ul style="list-style-type: none"> <li>- fences, warning signs, or other security and site control precautions</li> <li>- drainage controls</li> <li>- stabilization of berms, dikes, or impoundments or drainage or closing of lagoons</li> <li>- capping of contaminated soils or sludges</li> <li>- using chemicals or other materials to retard the spread of the contamination</li> <li>- excavation, consolidation, or removal of highly contaminated soils from drainage or other areas</li> <li>- removal of drums, carrels, tanks or other bulk containers</li> <li>- containment, treatment, disposal, or incineration of hazardous materials.)</li> </ul>



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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>CLEANUP SITES</b></p> <p><b>Administrative Record</b></p> <p><b>4-257.</b> The administrative file is required to be located at the office of the facility or other central location and made available for public review (40 CFR 300.805).</p> <p><b>4-258.</b> The administration record must be made available for public inspection when the engineering evaluation/cost analysis (EE/CA) is made available for public comment (40 CFR 300.820).</p>	<p>(NOTE: The requirements for an administrative record applies to all response actions taken under section 104 of CERCLA or sought, secured, or ordered administratively or judicially under section 106 of CERCLA as follows:</p> <ul style="list-style-type: none"> <li>- remedial actions where a remedial investigation started after the promulgation of the regulations concerning the administrative record</li> <li>- removal actions where the action memorandum is signed after the promulgation of these requirements.)</li> </ul> <p>Verify that a docket has been established at the facility or other central location.</p> <p>Verify that a copy of the documents are made available for public inspection at or near the site except in the following cases:</p> <ul style="list-style-type: none"> <li>- sampling and testing data, quality control and quality assurance documents, and chain of custody forms need not be located at or near the site if the index to the administrative record indicates the location and availability of this information</li> <li>- guidance documents not generated specifically for the site need not be located at or near the site if they are maintained at the central location and the index indicate the location and availability of these documents</li> <li>- publicly available technical literature not specific to the site need not be located at or near the site if they are maintained in a central location and the index indicates the location and availability of the information</li> <li>- documents included in the confidential portion of the administrative record</li> <li>- the administrative record for a removal action where the release, or threat of a release requires that onsite removal activity occur within hours of the determination that removal is appropriate and onsite removal activities stop within 30 days of starting need be available only at the central location.</li> </ul> <p>Verify that if it is determined that a removal action is appropriate and that a planning period of 6 mo exists before onsite removal action:</p> <ul style="list-style-type: none"> <li>- the administrative record is made available for public inspection when the EE/CA is made available</li> <li>- a notice of the availability of the administrative file is published in a newspaper of general circulation</li> <li>- a public comment period is provided</li> <li>- a written response to significant comments is included in the administrative file</li> <li>- public participation procedures as outlined in 40 CFR 300.415(m) (see checklist item 4-259) are done.</li> </ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-258. (continued)</b>	<p>Verify that if it is determined that a removal action is appropriate and there is not a planning period of 6 mo:</p> <ul style="list-style-type: none"><li>- the administrative record file is made public no later than 60 days after the start of onsite removal activity</li><li>- a notice of availability is published in a local newspaper of general circulation</li><li>- a public comment period of at least 30 days shall be provided for beginning at the time the administrative record is made available to the public</li><li>- a written response to significant comments is placed in the administrative file.</li></ul>

**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>CLEANUP SITES</b></p> <p><b>Community Relations</b></p> <p><b>4-259.</b> In the case of a removal action, specific community relations activities are required to be done (40 CFR 300.415(m)).</p>	<p>Verify that if the facility has conducted a removal action in response to a CERCLA enforcement action, the facility has appointed a spokesperson.</p> <p>Verify that when it is determined based on the site evaluation that removal is appropriate and less than 6 mo exists before onsite removal activity begins, the following is done:</p> <ul style="list-style-type: none"> <li>- a notice of availability of the administrative record is published in a major local newspaper of general circulation within 60 day of the start of removal activity</li> <li>- a public comment period of not less than 30 days is provided from the time the administrative record file is made available for public inspection</li> <li>- a written response is prepared for significant comments.</li> </ul> <p>Verify that for removal actions where onsite actions are expected to extend beyond 120 days from the start of onsite removal activities, the following is done by the end of the 120 day period:</p> <ul style="list-style-type: none"> <li>- local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process</li> <li>- prepare a formal community relations plan (CRP) specifying actions that will be taken</li> <li>- establish at least one local information repository at or near the location of the response action.</li> </ul> <p>Verify that when there is a planning period of 4 to 6 mo prior to the start of onsite removal actions the following are done:</p> <ul style="list-style-type: none"> <li>- prior to the completion of the EE/CA: <ul style="list-style-type: none"> <li>- local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process</li> <li>- prepare a formal CRP specifying actions that will be taken</li> <li>- establish at least one local information repository at or near the location of the response action</li> </ul> </li> <li>- publish a notice of availability ad brief description of the EE/CA in a major local newspaper of general circulation</li> <li>- provide a reasonable opportunity of not less than 30 days for comments</li> <li>- prepare a written response to comments.</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>4-260.</b> Specific community relations activities are required to occur in relation to a remedial investigation (40 CFR 300.430(c)).	<p>(NOTE: These community relations requirements apply to all remedial activities undertaken pursuant to CERCLA Section 104 and to Section 106 or Section 122 consent orders or decrees, or Section 106 administrative orders.)</p> <p>Verify that the following are done prior to starting field work for remedial investigations:</p> <ul style="list-style-type: none"> <li>- local officials, community residents, public interest groups, or other interested parties are interviewed to solicit their concerns and how they would like to be involved in the Superfund process</li> <li>- prepare a formal CRP specifying actions that will be taken</li> <li>- establish at least one local information repository at or near the location of the response action</li> <li>- inform the community of the availability of technical assistance grants.</li> </ul>
<b>4-261.</b> During the process of selecting a remedy, specific community relations activities are required to occur (40 CFR 300.430(f)(3)).	<p>Verify that after preparation of the proposed plan the following activities are done:</p> <ul style="list-style-type: none"> <li>- publication of a notice of availability of the proposed plan in a major local newspaper of general circulation</li> <li>- the proposed plan and supporting analysis and information are made available in the administrative record</li> <li>- at least 30 days is provided for oral and written comments</li> <li>- the opportunity for a public meeting is provided during the public comment period at or near the site at issue</li> <li>- creation of a transcript of the public meeting and the transcript is made available to the public</li> <li>- preparation of a written summary of the significant comments, criticisms, and new relevant information submitted during the such comment period and the lead agency's response to each.</li> </ul> <p>Verify that if additional information which has a significant impact becomes available after the publication of the proposed plan and prior to the adoption of the selected remedy in the record decision, the facility:</p> <ul style="list-style-type: none"> <li>- includes a discussion in the record of decision of the changes and reasons for changes</li> <li>- seeks additional public comment on the revised proposed plan.</li> </ul>



**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>4-262.</b> When the record of decision (ROD) is signed, a notice of availability must be published and the record made available for public inspection (40 CFR 300.430(f)(6)).</p> <p><b>4-263.</b> Specific community relations activities are required to occur during the remedial design/remedial action (RD/RA) phase of the IRP (40 CFR 300.435(c)).</p>	<p>Verify that when the ROD was signed, a notice was published in a major local newspaper of general circulation.</p> <p>Verify that the ROD is available for public inspection and copying at or near the facility prior to the start of any remedial activities.</p> <p>Verify that if the RA or enforcement action taken, or the settlement or consent decree entered into, differs significantly from the remedy selected in the ROD with respect to cost, scope, or performance, one of the following is done:</p> <ul style="list-style-type: none"> <li>- publish an explanation of the significant differences</li> <li>- propose an amendment to the ROD.</li> </ul> <p>Verify that after the completion of the final engineering design, a fact sheet is issued and a public briefing is done, as appropriate, prior to the initiation of the remedial action.</p>



**COMPLIANCE CATEGORY:  
HAZARDOUS WASTE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**CLEANUP SITES**

**Management**

**4-264.** Facilities with sites on the NPL are required to appoint a remedial project manager (40 CFR 300.120(a)).

Verify that the facility has appointed a remedial project manager.

**4-265.** Sites which are going to undergo cleanup that pose a threat to human health should be identified or demarcated (GMP).

Verify that contaminated sites which pose a threat to human health are marked, fenced, or in some manner demarcated.



## Appendix 4-1

### Identification and Listing of Hazardous Waste 40 CFR 261

#### Chart I Hazardous Waste from Nonspecific Sources (40 CFR 261.30 through .31)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
	<u>Generic</u>	
F001	The spent halogenated solvents used in degreasing. Trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and the chlorinated fluorocarbons; all spent solvent mixtures or blends used in degreasing containing before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents listed in F002, F004, F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F002	the following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures or blends containing, before use, a total of ten percent or more by volume, of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(t)
F003	the spent nonhalogenated solvents, xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents and spent solvent mixtures.	(i)

\* HAZARD CODES (Column 3)

t = toxic waste

i = ignitable waste

r = reactive waste

h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F004	the spent nonhalogenated solvents, cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.	(t)
F005	the following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbons disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures or blends containing, before use, a total of ten percent or more by volume of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these solvents.	(i,t)
F006	wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(t)
F007	spent cyanide plating bath solution from electroplating operations.	(r,t)
F008	plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(r,t)
F009	spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(r,t)
F010	quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(r,t)
F011	spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(r,t)
F012	quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.	(t)

\* HAZARD CODES (Column 3)

t = toxic waste

i = ignitable waste

r = reactive waste

h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F019	wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.	(t)
F020	wastes from use of tri-, or tetrachlorophenol, or intermediates used to produce its pesticide derivatives. **	(h)
F021	wastes of pentachlorophenol, or intermediates used to produce its derivatives. **	(h)
F022	wastes, of tetra-, penta-, or hexachlorobenzenes under alkaline conditions. **	(h)
F023	wastes, of tri and tetrachlorophenols. **	(t)
F024	wastes, including but not limited to distillation residues, heavy ends, tars and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, utilizing free radical catalyzed processes having carbon chain lengths from one to five, (Omits light ends, spent filters and filter aids, spent desiccants, wastewater, wastewater treatment sludges, spent catalysts and wastes listed in 10 CFR 261.32).	(t)
F025	condensed light ends, spent filters aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	(t)
F026	wastes of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(h)
F027	discharged unused formulations containing tri-, tetra-, or pentachlorophenol or discharged unused formulations containing compounds derived from these chlorophenols (does not include hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component).	(h)

\* HAZARD CODES (Column 3)

t = toxic waste  
i = ignitable waste  
r = reactive waste  
h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F028	residues from incineration or thermal treatment of soil contaminated with USEPA hazardous waste Nos. F020, F021, F022, F023, F026 and F027.	(t)
F032	wastewaters (except those that have not come into contact w/ process contaminants), process residue, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with 261.35 and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(t)
F034	wastewaters (except those that have come into contact w/ process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sludge from the treatment of wastewater from wood preserving processes that use creosote and or pentachlorophenol.	(t)
F035	wastewaters (except those that have come into contact w/ process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(t)
F037	petroleum refinery primary oil/water/solids separation sludge--Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refiners. This includes, but is not limited to, sludges generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow.	(t)

\* HAZARD CODES (Column 3)

t = toxic waste  
i = ignitable waste  
r = reactive waste  
h = acute hazardous waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.

(continued)



## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F037 (cont)	Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units*** (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.	(t)
F038	petroleum refinery secondary (emulsified) oil/water/solids separation sludge--Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries.	(t)
<p>* HAZARD CODE</p> <p>t = toxic waste i = ignitable waste r = reactive waste h = acute hazardous waste c = corrosive waste e = toxicity characteristic waste</p> <p>* NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.</p> <p>** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.</p> <p>*** Aggressive biological treatment units are defined as units which employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; of (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.</p>		

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F038 (cont)	Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units*** (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.	
F039	leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under Subpart D.	
<hr/>		
<b>* HAZARD CODE</b> t = toxic waste i = ignitable waste r = reactive waste h = acute hazardous waste c = corrosive waste e = toxicity characteristic waste		
<b>* NOTE:</b> The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.		
<b>**</b> (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.		
<b>***</b> Aggressive biological treatment units are defined as units which employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; or (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.		

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F039 (cont)	(Leachate resulting from the management of one or more of the following wastes and no other hazardous waste retains its hazardous waste number(s): F020, F021, F022, F023, F026, F027, and/or F028.)	
	<p>* HAZARD CODE</p> <p>t = toxic waste</p> <p>i = ignitable waste</p> <p>r = reactive waste</p> <p>h = acute hazardous waste</p> <p>c = corrosive waste</p> <p>e = toxicity characteristic waste</p>	
	<p>* NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.</p>	
	<p>** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.</p>	
	<p>*** Aggressive biological treatment units are defined as units which employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; of (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.</p>	

(continued)

## Appendix 4-1 (continued)

Chart 2  
Hazardous Wastes from Organic and Inorganic Chemical Industries  
(40 CFR 261.30 through 261.31)

Industry and USEPA Hazardous Waste Number	Hazardous Waste
<u>Organic Chemicals</u>	
K009	distillation bottoms from the production of acetaldehyde from ethylene. (t)
K010	distillation side cuts from the production of acetaldehyde from ethylene. (t)
K011	bottom stream from the wastewater stripper in the production of acrylonitrile. (r,t)
K013	bottom stream from the acetonitrile column in the production of acrylonitrile. (r,t)
K014	bottoms from the acetonitrile purification column in the production of acrylonitrile. (t)
K015	still bottoms from the distillation of benzyl chloride. (t)
K016	heavy ends or distillation residues from the production of carbon tetrachloride. (t)
K017	heavy ends (still bottoms) from the purification column in the production of epichlorohydrin. (t)
K018	heavy ends from fractionation in ethyl chloride production. (t)
K019	heavy ends from the distillation of ethylene dichloride in ethylene dichloride production. (t)
K020	heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production. (t)
K021	aqueous spent antimony catalyst waste from fluoromethanes production. (t)
K022	distillation bottom tars from the production of phenol/acetone from cumene. (t)
K023	distillation light ends from the production of phthalic anhydride from naphthalene. (t)
K024	distillation bottoms from the production of phthalic anhydride from naphthalene. (t)
* HAZARD CODES (Column 3) r = reactive waste t = toxic waste	

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K025	distillation bottoms from the production of nitrobenzene by the nitration of benzene.	(t)
K026	stripping still tails from the production of methyl ethyl pyridines.	(t)
K027	centrifuge residue from toluene diisocyanate production.	(r,t)
K028	spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.	(t)
K029	waste from the product stream stripper in the production of 1,1,1-trichloroethane.	(t)
K030	column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(t)
K083	distillation bottoms from aniline production.	(t)
K085	distillation of fractionation column bottoms from the production of chlorobenzene.	(t)
K103	process residues from aniline extraction from the production of aniline.	(t)
K104	combined wastewater streams generated from nitrobenzene or aniline production.	(t)
K105	separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.	(t)
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid	(C,T)
K108	Condensed Column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(I,T)
K109	Spent filter cartridges from product purification from production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(T)
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	(T)
K093	distillation light ends from the production of phthalic anhydride from orthoxylene.	(t)
K094	distillation bottoms from the production of phthalic anhydride from orthoxylene.	(t)
K095	distillation bottoms from the production of 1,1,1-trichloroethane.	(t)

\* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

(continued)

## Appendix 4-1 (continued)

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
K096	heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.	(t)
K111	product washwaters from the production of dinitrotoluene via nitration of toluene.	(c,t)
K112	reaction byproduct water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K113	condensed liquid light fraction of dinitrotoluene.	(t)
K114	vicinals from the purification of toluenediamine in the production of toluenediamine.	(t)
K115	heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K116	organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	(t)
K117	wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.	(t)
K118	spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
K136	still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(t)
<u>Inorganic Chemicals</u>		
K071	brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(t)
K073	chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(t)
K106	wastewater treatment sludge from the mercury cell process in chlorine production.	(t)
<u>Hazardous Waste from Explosives Manufacturing</u>		
k044	wastewater treatment sludge from the manufacturing and processing of explosives.	(r)
k045	spent carbon from the treatment of wastewater containing explosives.	(r)
k046	wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.	(t)
k047	pink/red water from TNT operations.	(t)

\* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

## Appendix 4-2

### Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Toxic Wastes

40 CFR 261.33

(COMMENT: primary hazardous properties of these materials have been indicated by the letter (t) (toxicity), (r) (reactivity), (i) (ignitability) and (c) (corrosivity); absence of a letter indicates that the compound is only listed for acute toxicity.)

USEPA Hazardous Waste No.	Substance
U001	acetaldehyde (i)
U034	acetaldehyde, trichloro-
U187	acetamide, N-(4-ethoxyphenyl)-
U005	acetamide, N-9H-fluoren-2-yl-
U240	acetic acid, (2,4-dichlorophenoxy)-, salts and esters
U112	acetic acid, ethyl ester (i)
U144	acetic acid, lead(2+) salt
U214	acetic acid, thallium(1+) salt
see F027	acetic acid, (2,4,5-trichlorophenoxy)-
U002	acetone (i)
U003	acetonitrile (i,t)
U004	acetophenone
U005	2-acetylaminofluorene
U006	acetyl chloride (c, r, t)
U007	acrylamide
U008	acrylic acid (i)
U009	acrylonitrile
U011	amitrole
U012	aniline (i, t)
U136	arsenic acid, dimethyl-
U014	auramine
U015	azaserine

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U010	azirino(2,3,3,4(pyrrolo(1,2-a)indole -4,7-dione, 6-amino-8-(((aminocarbonyl)oxy)methyl)-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-,
U157	benz[j]aceanthrylene, 1,2-dihydro-3- methyl-
U016	benza[c]ridine
U017	benzal chloride
U192	benzamide, 3,5-dichloro-n- (1,1-diethyl-2-propynyl-
U018	benz[a]anthracene
U094	1,2-benzanthracene, 7,12-dimethyl-
U012	benzenamine (i,t)
U014	benzenamine, 4,4-carbonimidoylbis(N,N-dimethyl-
U049	benzenamine, 4-chloro-2-methyl-,hydrochloride
U093	benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	benzenamine, 2-methyl-
U353	benzenamine, 4-methyl-
U158	benzenamine, 4,4-methylenebis(2-chloro-
U222	benzenamine, 2-methyl-, hydrochloride
U181	benzenamine, 2,-methyl-5-nitro
U019	benzene (i, t)
U038	benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	benzene, 1-bromo-4-phenoxy-
U035	benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	benzene, chloro-
U221	benzenediamine, ar-methyl-
U028	1,2-benzendicarboxylic acid, [bis(2-ethyl-hexyl)]ester
U069	1,2-benzenedicarboxylic acid, dibutyl ester
U088	1,2-benzenedicarboxylic acid, diethyl ester
U102	1,2-benzendicarboxylic acid, dimethyl ester
U107	1,2-benzenedicarboxylic acid, dioctyl ester
U070	benzene, 1,2-dichloro-

(continued)



## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U071	benzene, 1,3-dichloro-
U072	benzene, 1,4-dichloro-
U060	benzene, 1,1'- (2,2-dichloroethylidene) bis[4-chloro-
U017	benzene, (dichloromethyl)-
U223	benzene, 1,3-diisocyanatomethyl- (r,t)
U239	benzene, dimethyl-(i,t)
U201	1,3-benzenediol
U127	benzene, hexachloro-
U056	benzene, hexahydro- (i)
U220	benzene, methyl-
U105	benzene, 1-methyl-2,4-dinitro-
U106	benzene, 2-methyl-1,3-dinitro-
U055	benzene, (1-methylethyl)-(i)
U169	benzene, nitro- (i,t)
U183	Benzene, pentachloro-
U185	benzene, pentachloronitro-
U020	benzenesulfonic acid chloride (c,r)
U020	benzenesulfonyl chloride (c,r)
U207	benzene, 1,2,4,5-tetrachloro-
U061	benzene, 1,1'-(2,2,2- trichloroethylidene) bis[4-chloro
U247	benzene, 1,1'-(2,2,2- trichloroethylidene)[4-methoxy-
U023	benzene, (trichloromethyl)-
U234	benzene, 1,3,5-trinitro-
U021	benzidine
U202	1,2-benzisothiazolin-3-one, 1,1-dioxide and salts
U203	1,3-benzodioxole, 5-(2-propenyl)-
U141	1,3-benzodioxole, 5-(1-propenyl)-
U090	1,3-benzodioxole, 5-propyl-
U064	benzo[rs]pentaphene

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U248	2-H-1-benzopyran-2-on2, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts, when present at concentrations of 0.3% or less
U022	benzo[a]pyrene
U197	p-benzoquinone
U023	benzotrichloride (c,r,t)
U085	2,2-bioxirane (i,t)
U021	(1,1-biphenyl)-4,4-diamine
U073	(1,1-biphenyl)-4,4-diamine, 3,3-dichloro
U091	(1,1-biphenyl)-4,4-diamine, 3,3- dimethoxy-
U095	(1,1-biphenyl)4,4-diamine, 3,3- dimethyl-
U225	bromoform
U030	4-bromophenyl phenyl ether
U128	1,3-butadiene, 1,1,2,3,4,4- hexachloro
U172	1-butanamine, N-butyl-N-nitroso-
U031	1-butanol (i)
U159	2-butanone (i,t)
U160	2-butanone peroxide (r,t)
U053	2-butenal
U074	2-butene, 1,4-dichloro- (i,t)
U143	2-butenoic acid, 2-methyl-, 7- [(2,3-dihydroxy-2-(1-methoxyethyl) -3-methyl-1-oxobutoxy)methyl] - 2,3,5,7s-rytshyfto-1- pyrrolizin-1-yl ester, [1S-[alpha(Z),7(2S,3R), 7aalpha]]-
U031	n-Butyl alcohol (i)
U136	cacodylic acid
U032	calcium chromate
U238	carbamic acid, ethyl ester
U178	carbamic acid, methylnitroso- ethyl ester
U097	carbamic chloride, dimethyl-
U114	carbamodithioic acid, 1,2- ethanediybis-, salts and esters

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U062	carbamothioic acid, bis(1-methylethyl)-S- (2,3-dichloro-2-propenyl) ester
U215	carbonic acid, dithallium(1+)salt
U033	carbonic difluoride
U156	carbonochlorodic acid, methyl ester (i,t)
U033	carbon oxyfluoride (r,t)
U211	carbon tetrachloride
U034	chloral
U035	chlorambucil
U036	chlordane, alpha and gamma isomers
U026	chlomaphazine
U037	chlorobenzene
U039	p-chloro-m-cresol
U041	1-chloro-2,3-epoxypropane
U042	2-chloroethyl vinyl ether
U044	chloroform
U046	chloromethyl methyl ether
U047	beta-chloronaphthalene
U048	o-chlorophenol
U049	4-chloro-o-toluidine, hydrochloride
U032	chromic acid H <sub>2</sub> CrO <sub>4</sub> , calcium salt
U050	chrysene
U051	creosote
U052	cresols (cresylic acid)
U053	crotonaldehyde
U055	cumene (i)
U246	cyanogen bromide
U197	2,5-cyclohexadiene-1, 4-dione
U056	cyclohexane (i)
U129	cyclohexane 1,2,3,4,5,6- hexachloro-, (1alpha, 2alpha, 3beta, 4alpha, 6beta)-

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U057	cyclohexanone (i)
U130	1,3-cyclopentadiene, 1,2,3,4,5,5- hexachloro-
U058	cyclophosphamide
U240	2,4-d, salts and esters
U059	daunomycin
U060	ddd
U061	ddt
U062	diallate
U063	dibenz[a,h]anthracene
U064	dibenzo[a,i]pyrene
U066	1,2-dibromo-3-chloropropane
U069	dibutyl phthalate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3,3'-dichlorobenzidine
U074	1,4-dichloro-2-butene (i,t)
U075	dichlorodifluoromethane
U078	1,1-dichloroethylene
U079	1,2-dichloroethylene
U025	dichloroethyl ether
U027	dichloroisopropyl ether
U024	dichloromethoxy ethane
U081	2,4-dichlorophenol
U082	2,6-dichlorophenol
U084	1,3-dichloropropene
U085	1,2:3,4-diepoxybutane (i, t)
U108	1,4-diethyleneoxide
U028	diethylhexyl phthalate
U086	N,N-diethylhydrazine

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U087	O,O-diethyl-s-methyl dithiophosphate
U088	diethyl phthalate
U089	diethylstilbestrol
U090	dihydrosafrole
U091	3,3'-dimethoxybenzidine
U092	dimethylamine (i)
U093	dimethylaminoazobenzene
U094	7,12-dimethylbenz[a]anthracene
U095	3,3-dimethylbenzidine
U096	alpha,alpha-dimethylbenzylhydroperoxide (r)
U097	dimethylcarbamoyl chloride
U098	1,1-dimethylhydrazine
U099	1,2-dimethylhydrazine
U101	2,4-dimethylphenol
U102	dimethyl phthalate
U103	dimethyl sulfate
U105	2,4-dinitrotoluene
U106	2,6-dinitrotoluene
U107	di-n-octyl phthalate
U108	1,4-dioxane
U109	1,2-diphenylhydrazine
U110	dipropylamine (i)
U111	di-n-propylnitrosamine
U041	epichlorhydrin
U001	ethanal (i)
U174	ethanamine, N-ethyl-N-nitroso-
U155	1,2-ethanediamine, n,n- dimethyl-n'-2-pyridinyl- n'-(2-thienylmethyl)-
U067	ethane, 1,2-dibromo-
U076	ethane, 1,1-dichloro-
U077	ethane, 1,2-dichloro-

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U131	ethane, hexachloro-
U024	ethane, 1,1-[methylenebis(oxy)] bis[2-chloro-
U117	ethane, 1,1-oxybis- (i)
U025	ethane 1,1-oxybis[2-chloro-
U184	ethane, pentachloro-
U208	ethane, 1,1,1,2-tetrachloro-
U209	ethane, 1,1,2,2-tetrachloro-
U218	ethanethioamide
U359	ethane, 1,1,2-trichloro-
U173	ethanol, 2,2'-(nitrosoimino)bis-
U004	ethanone, 1-phenyl-
U043	ethene, chloro-
U042	ethene, (2-chloroethoxy-)
U078	ethene, 1,1-dichloro-
U079	ethene, 1,2-dichloro- (e)
U210	ethene, tetrachloro-
U228	ethene, trichloro
U112	ethyl acetate (i)
U113	ethyl acrylate (i)
U238	ethyl carbamate (urethane)
U117	ethyl ether (i)
U114	ethylenebisdithiocarbamic acid, salts and esters
U067	ethylene dibromide
U077	ethylene dichloride
U359	ethylene glycol monoethyl ether
U115	ethylene oxide (i,t)
U116	ethylenethiourea
U076	ethylidene dichloride
U118	ethyl methacrylate
U119	ethyl methanesulfonate

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U120	fluoranthene
U122	formaldehyde
U123	formic acid (c,t)
U124	furan (i)
U125	2-furancarboxaldehyde (i)
U147	2,5-furandione
U213	furan, tetrahydro- (i)
U125	furfural (i)
U124	furfuran (i)
U206	glucopyranose, 2-deoxy-2 (3-methyl-3-nitrosoureido)-
U126	glycidylaldehyde
U163	guanidine, N-methyl-N'-nitro- N-nitroso-
U127	hexachlorobenzene
U128	hexachlorobutadiene
U130	hexachlorocyclopentadiene
U131	hexachloroethane
U132	hexachlorophene
U243	hexachloropropene
U133	hydrazine (r,t)
U086	hydrazine, 1,2-diethyl-
U098	hydrazine, 1,1-dimethyl-
U099	hydrazine, 1,2-dimethyl-
U109	hydrazine, 1,2-diphenyl-
U134	hydrofluoric acid (c,t)
U134	hydrogen fluoride (c,t)
U135	hydrogen sulfide
U096	hydroperoxide, 1-methyl-1-phenylethyl- (r)
U116	2-imidazolidinethione
U137	indeno(1,2,3-cd)pyrene
U190	1,3-isobenzofurandione

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U140	isobutyl alcohol (i,t)
U141	isosafrole
U142	kepone
U143	lasiocarpine
U144	lead acetate
U146	lead, bis(acetato-O) tetrahydroxytri-
U145	lead phosphate
U146	lead subacetate
U129	lindane
U163	mnng
U147	maleic anhydride
U148	maleic hydrazide
U149	malononitrile
U150	melphalan
U151	mercury
U152	methacrylonitrile (i,t)
U092	methanamine (N-methyl- (i)
U029	methane, bromo-
U045	methane, chloro- (i,t)
U046	methane, chloromethoxy-
U068	methane, dibromo-
U080	methane, dichloro-
U075	methane, dichlorodifluoro-
U138	methane, iodo-
U119	methanesulfonic acid, ethyl ester
U211	methane, tetrachloro-
U153	methanethiol (i,t)
U225	methane, tribromo-
U044	methane, trichloro-
U121	methane, trichlorofluoro-

(continued)



## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U154	methanol (i)
U155	methapyrilene
U142	1,3,4-metheno-2H- cyclobuta[cd]pentalen-2-one- 1,1a,3,3a,4,5,5,5a,5b,6- decachlorooctahydro-
U247	methoxychlor
U154	methyl alcohol (i)
U029	methyl bromide
U186	1-methylbutadiene (i)
U045	methyl chloride (i,t)
U156	methyl chlorocarbonate (i,t)
U226	methyl chloroform
U157	3-methylcholanthrene
U158	4,4-methylenebis-(2-chloroaniline)
U068	methylene bromide
U080	methylene chloride
U159	methyl ethyl ketone (mek) (i,t)
U160	methyl ethyl ketone peroxide (r,t)
U138	methyl iodide
U161	methyl isobutyl ketone (i)
U162	methyl methacrylate (i,t)
U161	4-methyl-2-pentanone (i)
U164	methylthiouracil
U010	mitomycin C
U059	5,12-Naphthacenedione, (Bs(cis)8- acetyl-10-[(3- amino-2,3,6-trideoxy- alpha-L-lyxo-hexopyrano- syl)oxyl]- 7-8,9,10-tetrahydro-6,8,11- trihydroxy-1- methoxy-
U167	1-naphthalenamine
U168	2-naphthalenamine
U026	naphthalenamine, N,N'-bis (2-chloroethyl)-
U165	naphthalene
U047	naphthalene, 2-chloro-

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U166	1,4-naphthalenedione
U236	2,7-naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)- bis(azo)bis(5-amino-4-hydroxy)-, tetra-sodium salt
U166	1,4-Naphthoquinone
U167	alpha-naphthylamine
U168	beta-naphthylamine
U217	nitric acid, thallium(1+) salt (2-chloromethyl)-
U169	nitrobenzene (i,t)
U170	p-nitrophenol
U171	2-nitropropane (i)
U172	n-nitrosodi-n-butylamine
U173	n-nitrosodiethanolamine
U174	n-nitrosodiethylamine
U176	n-nitroso-n-ethylurea
U177	n-nitroso-n-methylurea
U178	n-nitroso-n-methylurethane
U179	n-nitrosopiperidine
U180	n-nitrosopyrrolidine
U181	5-nitro-o-toluidine
U193	1,2-oxathiolane, 2,2-dioxide
U058	2H-1,3,2-Oxazaphosphorine,2[bis(2- chloroethyl)amino]tetrahydro-, 2-oxide.
U115	oxirane (i,t)
U126	oxiranecarboxyaldehyde
U041	oxirane, 2-(chloromethyl)-
U182	paraldehyde
U183	pentachlorobenzene
U184	pentachloroethane
U185	pentachloronitrobenzene
see F027	pentachlorophenol

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U161	pentanol, 4-methyl-
U186	1,3-pentadiene (i)
U187	phenacetin
U188	phenol
U048	phenol, 2-chloro-
U039	phenol, 4-chloro-3-methyl-
U081	phenol, 2,4-dichloro-
U082	phenol, 2,6-dichloro-
U089	phenol, 4,4'-(1,2-diethyl- 1,2-ethenediyl)bis-,
U101	phenol, 2,4-dimethyl-
U052	phenol, methyl
U132	phenol, 2,2'-methylenebis [3,4,6-trichloro-
U170	phenol, 4-nitro-
see F027	phenol, pentachloro-
see F027	phenol, 2,3,4,6-tetrachloro-
see F027	phenol, 2,4,5-trichloro-
see F027	phenol, 2,4,6-trichloro-
U150	l-phenylalanine, 4- [bis(2-chloroethyl)amino]-
U145	phosphoric acid, lead salt
U087	phosphorodithioic acid, 0,0-diethyl S-methyl ester
U189	phosphorus sulfide (r)
U190	phthalic anhydride
U191	2-picoline
U179	piperidine, 1-nitroso-
U192	pronamide
U194	1-propanamine (i,t)
U111	1-propanamine, n-nitroso-n-propyl-
U110	1-propanamine, n-propyl- (i)
U066	propane, 1,2-dibromo-3-chloro-
U083	propane, 1,2-dichloro-

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U149	propanedinitrile
U171	propane, 2-nitro- (i,t)
U027	propane, 2,2-oxybis[2-chloro-
U193	1,3-propane sultone
see F027	propanoic acid, 2-(2,4,5- trichlorophenoxy)-
U235	1-propanol, 2,3-dibromo-, phosphate (3:1)
U140	1-propanol, 2-methyl- (i,t)
U002	2-propanone (i)
U007	2-propenamide
U084	1-propene, 1,3-dichloro-
U243	1-propene, 1,1,2,3,3,3-hexachloro-
U009	2-propenenitrile
U152	2-propanenitrile, 2-methyl- (i,t)
U008	2-propenoic acid (i)
U113	2-propenic acid, ethyl ester (i)
U118	2-propenoic acid, 2-methyl-, ethyl ester
U162	2-propenoic acid, 2-methyl-, methyl ester (i,t)
U194	n-propylamine (i,t)
U083	propylene dichloride
U148	3,6-pyridazinedione, 1,2-dihydro-
U196	pyridine
U191	pyridine, 2-methyl-
U237	2,4(1H,3H)-pyrimidinedione, 5-[bis(2-chloroet- hyl)amino]-
U164	4(1H)-pyrimidinone, 2,3-dihydro-6-methyl 2-thioxo-
U180	pyrrolidine, 1-nitroso--
U200	reserpine
U201	resorcinol
U202	saccharin and salts
U203	safrole
U204	selenious acid

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U204	selenium dioxide
U205	selenium sulfide
U205	selenium sulfide SeS <sub>2</sub> (r,t)
U015	l-serine, diazoacetate (ester)
see F027	silvex (2,4,5-tp)
U206	streptozotocin
U103	sulfuric acid, dimethyl ester
U189	sulfur phosphide (r)
U232	2,4,5-T
U207	1,2,4,5-tetrachlorobenzene
U208	1,1,1,2-tetrachloroethane
U209	1,1,2,2-tetrachloroethane
U210	tetrachloroethylene
see F027	2,3,4,6-tetrachlorophenol
U213	tetrahydrofuran (i)
U214	thallium (i) acetate
U215	thallium (i) carbonate
U216	thallium chloride
U216	thallium chloride TlCl
U217	thallium (i) nitrate
U218	thioacetamide
U153	thiomethanol (i,t)
U244	thioperoxydicarbonic diamide, tetramethyl-
U219	thiourea
U244	thiuram
U220	toluene
U221	toluenediamine
U223	toluene diisocyanate (r,t)
U328	o-toluidine
U353	p-toluidine

(continued)

## Appendix 4-2 (continued)

USEPA Hazardous Waste No.	Substance
U222	o-toluidine hydrochloride
U011	1H-1,2,4-triazol-3-amine
U227	1,1,2-trichloroethane
U228	trichloroethylene
U121	trichloromonofluoromethane
U230	2,4,5-trichlorophenol
U231	2,4,6-trichlorophenol
U234	1,3,5-trinitrobenzene (r,t)
U182	1,3,5-trioxane, 2,4,6-trimethyl-
U235	tris(2,3-dibromopropyl)phosphate
U236	trypan blue
U237	uracil mustard
U176	urea, n-ethyl-n-nitroso-
U177	urea, n-methyl-n-nitroso-
U043	vinyl chloride
U248	Warfarin, when present at concentrations of .3% or less
U239	xylene (i)
U200	yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxy-benzoyl)oxy], methyl ester
U249	Zinc phosphide, when present at concentrations of 10% or less.

### Appendix 4-3

#### Toxicity Characteristics Constituents and Regulatory Levels (40 CFR 261.24)

USEPA HW No.	Constituent	CAS No	Chronic toxicity reference level	Regulatory level (mg/L)
D004	Arsenic	7440-38-2	0.05	5.0
D005	Barium	7440-39-3	1.0	100.0
D018	Benzene	71-43-2	0.005	0.5
D006	Cadmium	7440-43-9	0.01	1.0
D019	Carbon tetrachloride	56-23-5	0.005	0.5
D020	Chlordane	57-74-9	0.0003	0.03
D021	Chlorobenzene	108-90-7	1	100.0
D022	Chloroform	67-66-3	0.06	6.0
D007	Chromium	7440-47-3	0.05	5.0
D023	o-Cresol	95-48-7	2	200.0 <sup>1</sup>
D024	m-Cresol	108-39-4	2	200.0 <sup>1</sup>
D025	p-Cresol	106-44-5	2	200.0 <sup>1</sup>
D026	Cresol		2	200.0 <sup>1</sup>
D016	2,4-D	94-75-7	0.1	10.0
D027	1,4-Dichlorobenzene	106-46-7	0.075	7.5
D028	1,2-Dichloroethane	107-06-2	0.005	0.5
D029	1,1-Dichloroethylene	75-35-4	0.007	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.0005	0.13 <sup>2</sup>
D012	Endrin	72-20-8	0.0002	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.00008	0.008
D032	Hexachlorobenzene	118-74-1	0.0002	0.13 <sup>2</sup>
D033	Hexachloro-1,3-butadiene	87-68	3	0.005
D034	Hexachloroethane	67-72-1	0.03	3.0
D008	Lead	7439-92-1	0.05	5.0
D013	Lindane	58-89-9	0.004	0.4
D009	Mercury	7439-97-6	0.002	0.2
D014	Methoxychlor	72-43-5	0.1	10.0
D035	Methyl ethyl ketone	78-93-3	2	200.0
D036	Nitrobenzene	98-95-3	0.02	2.0
D037	Pentachlorophenol	87-86-5	1	100.0
D038	Pyridine	110-86-1	0.04	5.0 <sup>2</sup>
D010	Selenium	7782-49-2	0.01	1.0
D011	Silver	7440-22-4	0.05	5.0
D039	Tetrachloroethylene	127-18-4	0.007	0.7
D015	Toxaphene	8001-35-2	0.005	0.5
D040	Trichloroethylene	79-01-6	0.005	0.5
D041	2,4,5-Trichlorophenol	95-95-4	4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	0.02	2.0
D017	2,4,5-TP (Silvex)	93-72-1	0.01	1.0
D043	Vinyl chloride	75-01-4	0.002	0.2

<sup>1</sup> If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used.

<sup>2</sup> Quantitation limit is greater than the calculated regulatory level. Therefore, the quantitation limit becomes the regulatory level.





## Appendix 4-4

### Identification of Hazardous Wastes Hazardous Constituents (40 CFR 261, Appendix VIII)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Acetonitrile .....	Same .....	75-05-8	U003
Acetophenone .....	Ethanone, 1-phenyl- .....	98-86-2	U004
2-Acetylaminofluorene .....	Acetamide, N-9H-fluorene-2-yl .....	53-96-3	U005
Acetyl chloride .....	Same .....	75-36-5	U006
1-Acetyl-2-thiourea .....	Acetamide, N-(aminothioxomethyl)- .....	591-08-2	P002
Acrolein .....	2-Propenal .....	107-02-8	P003
Acrylamide .....	2-Propenamide .....	79-06-1	U007
Acrylonitrile .....	2-Propenenitrile .....	107-13-1	U009
Aflatoxins .....	Same .....	1402-68-2	.....
Aldicarb .....	Propanal, 2-methyl-2-(methylthio)-, O- [(methylamino)carbonyl]oxime.	116-06-3	P070
Aldrin .....	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10- hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1 alpha, 4alpha, 4abeta, 5alpha, 8alpha, 8abeta)-.	309-00-2	P004
Allyl alcohol .....	2-Propen-1-ol .....	107-18-6	P005
Allyl chloride .....	1-Propane, 3-chloro .....	107-18-6	.....
Aluminum phosphide .....	Same .....	20859-73-8	P006
4-Aminobiphenyl .....	[1,1'-Biphenyl]-4-amine .....	92-67-1	.....
5-(Aminomethyl)-3-isoxazolol .....	3(2H)-Isioxazolone, 5-(aminomethyl)- .....	2763-96-4	P007
4-Aminopyridine .....	4-Pyridinamine .....	504-24-5	P008
Amitrole .....	1H-1,2,4-Triazol-3-amine .....	61-82-5	U011
Ammonium vanadate .....	Vanadic acid, ammonium salt .....	7803-55-6	P119
Aniline .....	Benzenzmine .....	62-53-3	U012
Antimony .....	Same .....	7440-36-0	.....
Antimony compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Aramite .....	Sulfurous acid, 2-chloroethyl 2-[4-(1,1- dimethylethyl)phenoxy]-1-methylethyl ester.	140-57-8	.....
Arsenic .....	Same .....	7440-38-2	.....
Arsenic compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Arsenic acid .....	Arsenic acid H <sub>3</sub> AsO <sub>4</sub> .....	7778-39-4	P010
Arsenic pentoxide .....	Arsenic oxide As <sub>2</sub> O <sub>5</sub> .....	1303-28-2	P011
Arsenic trioxide .....	Arsenic oxide As <sub>2</sub> O <sub>3</sub> .....	1327-53-3	P012
Auramine .....	Benzenamine, 4,4'-carbonimidoylbis(N,N- dimethyl).	492-80-8	.....
Azaserine .....	L-Serine, diazoacetate (ester) .....	115-02-6	U015
Barium .....	Same .....	7440-39-3	.....
Barium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Barium cyanide .....	Same .....	542-62-1	P013
Benz[c]acridine .....	Same .....	225-51-4	U016
Benz[a]anthracene .....	Same .....	56-55-3	U018
Benzal chloride .....	Benzene, (dichloromethyl)- .....	98-87-3	U017
Benzene .....	Same .....	71-43-2	U019
Benzeneearsonic acid .....	Arsonic acid, phenyl- .....	98-05-5	.....
Benzidine .....	[1,1'-Biphenyl]-4,4' -diamine .....	92-87-5	U021
Benzo[b]fluoranthene .....	Benz[e]acephenanthrylene .....	205-99-2	.....
Benzo[j]fluoranthene .....	Same .....	205-82-3	.....
Benzo[k]fluoranthene .....	Same .....	207-08-9	.....
Benzo[a]pyrene .....	Same .....	50-32-8	U022
p-Benzoquinone .....	2,5-Cyclohexadiene-1,4-dione .....	106-51-4	U197
Benzotrichloride .....	Benzene, (trichloromethyl)- .....	98-07-7	U023
Benzyl chloride .....	Benzene, (chloromethyl)- .....	100-44-7	P028
Beryllium .....	Same .....	7440-41-7	P015
Beryllium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Bromoacetone .....	2-Propanone, 1-bromo- .....	598-31-2	P017
Bromoform .....	Methane, tribromo- .....	75-25-2	U225
4-Bromophenyl phenyl ether .....	Benzene, 1-bromo-4phenoxy- .....	101-55-3	U030
Brucine .....	Strychnidin-10-one, 2,3-dimethoxy- .....	357-57-3	P018
Butyl benzyl phthalate .....	1,2-Benzenedicarboxylic acid, butyl phenyl-methyl ester.	85-68-7	.....
Cacodylic acid .....	Arsinic acid, dimethyl- .....	75-60-5	U136
Cadmium .....	Same .....	7440-43-9	.....
Cadmium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Calcium chromate .....	Chromic acid H <sub>2</sub> CrO <sub>4</sub> , calcium salt .....	13765-19-0	U032
Calcium cyanide .....	Calcium cyanide Ca(CN) <sub>2</sub> .....	592-0108	P021
Carbon disulfide .....	Same .....	75-15-0	P022
Carbon oxyfluoride .....	Carbonic difluoride .....	353-50-4	U033
Carbon tetrachloride .....	Methane, tetrachloro- .....	56-23-5	U211
Chloral .....	Acetaldehyde, trichloro- .....	75-87-6	U034
Chlorambucil .....	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-.	305-03-3	U035
Chlordane .....	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-oc-tachloro-2,3,3a,4,7,7a-hexahydro-.	57-74-9	U036
Chlordane (alpha and gamma isomers ...	.....	.....	.....
Chlorinated benzenes, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlorinated ethane, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlorinated fluorocarbons, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlorinated naphthalene, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlorinated phenol, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chlomaphazin .....	Naphthalenamine, N,N'-bis(2-chloroethyl)-.	494-03-1	U026
Chloroacetaldehyde .....	Acetaldehyde, chloro- .....	107-20-0	P023
Chloroalkyl ethers, N.O.S. <sup>1</sup> .....	.....	.....	.....
p-Chloroaniline .....	Benzenamine, 4-chloro- .....	106-47-8	P024

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Chlorobenzene.....	Benzene, chloro- .....	108-90-7	U037
Chlorobenzilate .....	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester.	510-15-6	U038
p-Chloro-m-cresol .....	Phenol, 4-chloro-3-methyl- .....	59-50-7	U039
2-Chloroethyl vinyl ether .....	Ethene, (2-chloroethoxy)- .....	110-75-8	U042
Chloroform .....	Methane, trichloro- .....	67-66-3	U044
Chloromethyl methyl ether .....	Methane, chloromethoxy- .....	107-30-2	U046
beta-Chloronaphthalene .....	Naphthalene, 2-chloro- .....	91-58-7	U047
o-Chlorophenol .....	Phenol, 2-chloro- .....	95-57-8	U048
1-(o-Chlorophenyl)thiourea .....	Thiourea, (2-chlorophenyl)- .....	5344-82-1	P026
Chloroprene .....	1,3-Butadiene, 2-chloro .....	126-99-8	.....
3-Chloropropionitrile .....	Propanenitrile, 3-chloro- .....	542-76-7	P027
Chromium .....	Same .....	7440-47-3	.....
Chromium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Chrysene .....	Same .....	218-01-9	U050
Citrus red No. 2 .....	2-Naphthalenol, 1-[(2,5-dimethoxyphenyl)azo]- .....	6358-53-8	.....
Coal tar creosote .....	Same .....	8007-45-2	.....
Copper cyanide .....	Copper cyanide CuCN .....	544-92-3	P029
Creosote .....	Same .....	.....	U051
Cresol (Cresylic acid) .....	Phenol, methyl- .....	1319-77-3	U052
Crotonaldehyde .....	2-Butenal .....	4170-30-3	U053
Cyanides (soluble salts and complexes) N.O.S. <sup>1</sup> .....	.....	.....	P030
Cyanogen .....	Ethanedinitrile .....	460-19-5	P031
Cyanogen bromide .....	Cyanogen bromide (CN)Br .....	506-68-3	U246
Cyanogen chloride .....	Cyanogen chloride (CN)Cl .....	506-77-4	P033
Cycasin .....	beta-D-Glucopyranoside, (methyl-ONN-azoxy)methyl .....	14901-08-7	.....
2-Cyclohexyl-4,6-dinitrophenol .....	Phenol, 2-cyclohexyl-4,6-dinitro- .....	131-89-5	P034
Cyclophosphamide .....	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide.	50-18-0	U058
2,4-D .....	Acetic acid, (2,4-dichlorophenoxy)- .....	94-75-7	U240
2,4-D, salts, esters .....	.....	.....	U240
Daunomycin .....	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-xylohexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-.	20830-81-3	U059
DDD .....	Benzene, 1,1'-(2,2-dichloroethylidene)bis(4-chloro-.	72-54-8	U060
DDE .....	Benzene, 1,1'-(dichloroethenylidene)bis(4-chloro-.	72-55-9	.....
DDT .....	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis(4-chloro-.	50-29-3	U061
Diallate .....	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester.	2303-16-4	U062
Dibenz[a,h]acridine .....	Same .....	226-36-8	.....
Dibenz[a,j]acridine .....	Same .....	224-42-0	.....

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Dibenz[a,h]anthracene.....	Same.....	53-70-3	U063
7H-Dibenzo[c,g]carbazole.....	Same.....	194-59-2	.....
Dibenzo[a,e]pyrene.....	Naphtho[1,2,3,4-def]chrysene.....	192-65-4	.....
Dibenzo[a,h]pyrene.....	Dibenzo[b,dif]chrysene.....	189-64-0	.....
Dibenzo[a,i]pyrene.....	Benzo[rs]pentaphene.....	189-55-9	U064
1,2-Dibromo-3-chloropropane.....	Propane, 1,2-dibromo-3-chloro-.....	96-12-8	U066
Dibutyl phthalate.....	1,2-Benzenedicarboxylic acid, dibutyl ester	84-74-2	U069
o-Dichlorobenzene.....	Benzene, 1,2-dichloro-.....	95-50-1	U070
m-Dichlorobenzene.....	Benzene, 1,3-dichloro-.....	541-73-1	U071
p-Dichlorobenzene.....	Benzene, 1,4-dichloro-.....	106-46-7	U072
Dichlorobenzene, N.O.S. <sup>1</sup> .....	Benzene, dichloro-.....	25321-22-6	.....
3,3'-Dichlorobenzidine.....	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	91-94-1	U073
1,4-Dichloro-2-butene.....	2-Butene, 1,4-dichloro.....	764-41-0	U074
Dichlorodifluoromethane.....	Methane, dichlorodifluoro-.....	75-71-8	U075
Dichloroethylene, N.O.S. <sup>1</sup> .....	Dichloroethylene.....	25323-30-2	.....
1,1-Dichloroethylene.....	Ethene, 1,1-dichloro.....	75-35-4	U078
1,2-Dichloroethylene.....	Ethene, 1,2-dichloro-, (E).....	156-60-5	U079
Dichloroethyl ether.....	Ethane, 1,1'-oxybis[2-chloro-.....	111-44-4	U025
Dichloroisopropyl ether.....	Propane, 2,2'-oxybis[2-chloro.....	108-60-1	U027
Dichloromethoxy ethane.....	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-.....	111-91-1	U024
Dichloromethyl ether.....	Methane, oxybis[chloro-.....	542-88-1	P016
2,4-Dichlorophenol.....	Phenol, 2,4-dichloro-.....	120-83-2	U081
2,6-Dichlorophenol.....	Phenol, 1,6-dichloro-.....	87-65-0	U082
Dichlorophenylarsine.....	Arsonous dichloride, phenyl-.....	696-28-6	P036
Dichloropropane, N.O.S. <sup>1</sup> .....	Propane, dichloro-.....	26638-19-7	.....
Dichloropropanol, N.O.S. <sup>1</sup> .....	Propanol, dichloro-.....	26545-73-3	.....
Dichloropropene, N.O.S. <sup>1</sup> .....	1-Propene, dichloro-.....	26952-23-8	.....
1,3-Dichloropropene.....	1-Propene, 1,3-dichloro-.....	542-75-6	U084
Dieldrin.....	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-.....	60-57-1	P037
1,2:3,4-Diepoxybutane.....	2,2'-Bioxirane.....	1464-53-5	U085
Diethylarsine.....	Arsine, diethyl-.....	692-42-2	P038
1,4-Diethyleneoxide.....	1,4Dioxane.....	123-91-1	U108
Diethylhexyl phthalate.....	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester.....	117-81-7	U028
N,N'-Diethylhydrazine.....	Hydrazine, 1,2-diethyl-.....	1615-80-1	U086
O,O-Diethyl S-methyl dithiophosphate....	Phosphorodithioic acid, O,O-diethyl S-methyl.....	3288-58-2	U087
Diethyl-p-nitrophenyl phosphate.....	Phosphoric acid, diethyl 4-nitrophenyl ester.....	311-45-5	P041
Diethyl phthalate.....	1,2-Benzenedicarboxylic acid, diethyl ester.....	84-66-2	U088
O,O-Diethyl O-pyrazinyl phosphorothioate.....	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester.....	297-97-2	P040

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Diethylstilbesterol.....	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-.	56-53-1	U089
Dihydrosafrole.....	1,3-Benzodioxole, 5-propyl-.....	94-58-6	U090
Diisopropylfluorophosphate (DFP).....	Phosphorofluoridic, bis(1-methylethyl) ester.	55-91-4	P043
Dimethoate.....	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester.	60-51-5	P044
3,3'-Dimethoxybenzidine.....	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	119-90-4	U091
p-Dimethylaminoazobenzene.....	Benzenamine, N,N-dimethyl-4-(phenylazo)-	60-11-7	U093
7,12-Dimethylbenz[a]anthracene.....	Benz[a]anthracene, 7,12-dimethyl-.....	57-97-6	U094
3,3'-Dimethylbenzidine.....	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	119-90-4	U095
Dimethylcarbamoyl chloride.....	Carbamic chloride, dimethyl-.....	79-44-7	U097
1,1-Dimethylhydrazine.....	Hydrazine, 1,1-dimethyl-.....	57-14-7	U098
1,2-Dimethylhydrazine.....	Hydrazine, 1,2-dimethyl-.....	540-73-8	U099
alpha, alpha-Dimethylphenethylamine.....	Benzenethanamine, alpha, alpha-dimethyl	122-09-8	P046
2,4-Dimethylphenol.....	Phenol, 2,4-dimethyl-.....	105-67-9	U101
Dimethyl phthalate.....	1,2-Benzenedicarboxylic acid, dimethyl ester.....	131-11-3	U102
Dimethyl sulfate.....	Sulfuric acid, dimethyl ester.....	77-78-1	U103
Dinitrobenzene, N.O.S. <sup>1</sup> .....	Benzene, dinitro-.....	25154-54-5	.....
4,6-Dinitro-o-cresol.....	Phenol, 2-methyl-4,6-dinitro-.....	534-52-1	P047
4,6-Dinitro-o-cresol salts.....	.....	.....	P047
2,4-Dinitrophenol.....	Phenol, 2-methyl-4,6-dinitro-.....	51-28-5	P048
2,4-Dinitrotoluene.....	Benzene, 1-methyl-2,4-dinitro-.....	121-14-2	U105
2,6-Dinitrotoluene.....	Benzene, 2-methyl-1,3-dinitro-.....	606-20-2	U106
Dinoseb.....	Phenol, 2-(1-methylpropyl)-4,6-dinitro-.....	88-85-7	P020
Di-n-octyl phthalate.....	1,2-Benzenedicarboxylic acid, dioctyl ester	117-84-0	U017
Diphenylamine.....	Benzenamine, N-phenyl-.....	122-39-4	.....
1,2-Diphenylhydrazine.....	Hydrazine, 1,2-diphenyl-.....	122-66-7	U109
Di-n-propylnitrosamine.....	1-Propanamine, N-nitroso-N-propyl-.....	621-64-7	U111
Disulfoton.....	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester.	298-04-4	P039
Dithiobiuret.....	Thioimidodicarbonic diamide [(H <sub>3</sub> N)C(S)] <sub>2</sub> NH.	541-53-7	P049
Endothall.....	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic	145-73-3	P088
Endrin.....	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octa-hydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-.	72-20-8	P051
Endrin metabolites.....	.....	.....	P051
Epichlorohydrin.....	Oxirane, (chloromethyl)-.....	106-89-8	U041
Epinephrine.....	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-.	51-43-4	P042
Ethyl carbamate (urethane).....	Carbamic acid, ethyl ester.....	51-79-6	U238
Ethyl cyanide.....	Propanenitrile.....	107-12-0	P101
Ethylenebisdithiocarbamic acid.....	Carbamodithioic acid, 1,2-ethanediybis-....	111-54-6	U114

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Ethylenebisdithiocarbamic acid, salts and esters.	.....	.....	U114
Ethylene dibromide .....	Ethane, 1,2-dibromo-.....	106-93-4	U067
Ethylene dichloride.....	Ethane, 1,2-dichloro-.....	107-06-2	U077
Ethylene glycol monoethyl ether.....	Ethanol, 2-ethoxy-.....	110-80-5	U359
Ethyleneimine .....	Aziridine.....	151-56-4	P054
Ethylene oxide .....	Oxirane.....	75-21-8	U115
Ethylenethiourea .....	2-Imidazolidinethione .....	96-45-7	U116
Ethylidene dichloride.....	Ethane, 1,1-dichloro-.....	75-34-3	U076
Ethyl methacrylate .....	2-Propenoic acid, 2-methyl-, ethyl ester.....	97-63-2	U118
Ethyl methanesulfonate .....	Methanesulfonic acid, ethyl ester .....	65-50-0	U119
Famphur.....	Phosphorothioic acid, O-[4- [(dimethylamino)sulfonyl]phenyl] O,O-di- methyl ester.	52-85-7	P097
Fluoranthene.....	Same .....	206-44-0	U120
Fluorine .....	Same .....	7782-41-4	P056
Fluoroacetamide .....	Acetamide, 2-fluoro-, sodium salt.....	62-74-8	P058
Formaldehyde .....	Same .....	50-00-0	U122
Formic acid .....	Same .....	64-18-6	U123
Glycidylaldehyde.....	Oxiranecarboxyaldehyde	765-34-4	U126
Halomethanes, N.O.S. <sup>1</sup> .....	.....	.....	.....
Heptachlor.....	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-hep- tachloro-3a,4,7,7a-tetrahydro-	76-44-8	P059
Heptachlor epoxide.....	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a- hexa- hydro-, 1aalpha, 1bbeta, 2alpha, 5alpha, 5abeta, 6beta, 6aalpha)-.	.....	.....
Heptachlor epoxide (alpha, beta, and gamma isomers).	.....	.....	.....
Heptachlorodibenzofurans .....	.....	.....	.....
Heptachlorodibenzo-p-dioxins .....	.....	.....	.....
Hexachlorobenzene.....	Benzene, hexachloro-	118-74-1	U127
Hexachlorobutadiene.....	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87-68-3	U128
Hexachlorocyclopentadiene.....	1,3-Cyclopentadiene, 1,2,3,4,5,5- hexachloro-	77-47-4	U130
Hexchlorodibenzo-p-dioxins.....	.....	.....	.....
Hexchlorodibenzofurans .....	.....	.....	.....
Hexachloroethane.....	Ethane, hexachloro-.....	67-72-1	U131
Hexachlorophene.....	Phenol, 2,2'-methylenebis[3,4,6-trichloro- ...	70-30-4	U132
Hexachloropropene.....	1-Propene, 1,1,2,3,3,3-hexachloro-.....	1888-71-7	U243
Hexaethyl tetraphosphate .....	Tetraphosphoric acid, hexaethyl ester.....	757-58-4	P062
Hydrazine.....	Same .....	302-01-2	U133
Hydrogen cyanide .....	Hydrocyanic acid.....	74-90-8	P063
Hydrogen fluoride.....	Hydrofluoric acid.....	7654-39-3	U134
Hydrogen sulfide .....	Hydrogen sulfide H <sub>2</sub> S.....	7738-06-4	U135
Indeno[1,2,3-cd]pyrene .....	Same .....	193-39-3	U134

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Isobutyl alcohol .....	1-Propanol, 2-methyl- .....	78-83-1	U140
Isodrin .....	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-	465-73-6	P060
Isosafrole .....	1,3-Benzodioxole, 5-(1-propenyl)- .....	120-58-1	U141
Kepone .....	1,3,4-Methano-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	143-50-0	U142
Lasiocarpine .....	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [S-[1alpha(Z),7(2S*,3R*),7aalpha]]-	303-34-1	4143
Lead .....	Same .....	7439-92-1	.....
Lead compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Lead acetate .....	Acetic acid, lead(2+) salt .....	301-04-2	U144
Lead phosphate .....	Phosphoric acid, lead(2+) salt (2:3) .....	7446-27-7	U145
Lead subacetate .....	Lead, bus(acetato-O)tetrahydroxytri- .....	1335-32-6	U146
Lindane .....	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-	58-89-9	U129
Maleic anhydride .....	2,5-Furandione .....	108-31-6	U147
Maleic hydrazide .....	3,6-Pyridazinedione, 1,2-dihydro- .....	123-33-1	U148
Malononitrile .....	Propanedinitrile .....	109-77-3	U149
Melphalan .....	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-	148-82-3	U150
Mercury .....	Same .....	7439-97-6	U151
Mercury compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Mercury fulminate .....	Fulminic acid, mercury(2+) salt .....	628-86-4	P065
Methacrylonitrile .....	2Propenenitrile, 2-methyl- .....	126-98-7	U152
Methapyriline .....	1,2-Ethanediamine, NN-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	91-80-5	U155
Methomyl .....	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester.	16752-77-5	P066
Methoxychlor .....	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-	72-43-5	U247
Methyl bromide .....	Methane, bromo- .....	74-83-9	U029
Methyl chloride .....	Methane, chloro- .....	74-87-3	U045
Methyl chlorocarbonate .....	Carbonochloridic acid, methyl ester .....	79-22-1	U158
Methyl chloroform .....	Ethane, 1,1,1-trichloro- .....	71-55-6	U226
3-Methylcholanthrene .....	Benz[ <i>a</i> ]aceanthrylene, 1,2-dihydro-3-methyl	56-49-5	U157
4,4'-Methylenebis(2-chloroaniline) .....	Benzenamine, 4,4'-methylenebis[2-chloro-	101-14-4	U158
Methylene bromide .....	Methane, dibromo- .....	74-95-3	U068
Methylene chloride .....	Methane, dichloro- .....	75-09-2	U080
Methyl ethyl ketone (MEK) .....	2-Butanone .....	78-93-3	U159

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Methyl ethyl ketone peroxide .....	2-Butanone, peroxide .....	1338-23-4	U160
Methyl hydrazine .....	Hydrazine, methyl- .....	60-34-4	P068
Methyl iodide .....	Methane, iodo- .....	74-88-4	U138
Methyl isocyanate .....	Methane, isocyanato-824-83-9 .....	P064	.....
2-Methylactonitrile .....	Propanenitrile, 2-hydroxy-2-methyl- .....	75-86-5	P069
Methyl methacrylate .....	2-Propenoic acid, 2-methyl-methyl ester .....	80-62-6	U162
Methyl methanesulfonate .....	Methanesulfonic acid, methyl ester .....	66-27-3	.....
Methyl parathion .....	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester.	298-00-0	P071
Methylthiouracil .....	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-.	56-04-2	U164
Mitomycin C .....	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-1aalpha,8beta,8aalpha,8balpha)]-.	50-07-7	U010
MNNG .....	Guanidine, N-methyl-N'-nitro-N-nitroso- .....	70-25-7	U163
Mustard gas .....	Ethane, 1,1'-thiobis[2-chloro- .....	505-60-2	.....
Naphthalene .....	Same .....	91-20-3	U165
1,4-Naphthoquinone .....	1,4-Naphthalenedione .....	130-15-4	U166
alpha-Naphthylamine .....	1-Naphthalenamine .....	134-32-7	U167
beta-Naphthylamine .....	2-Naphthalenamine .....	91-59-8	U168
alpha-Naphthylthiourea .....	Thiourea, 1-naphthalenyl- .....	86-88-4	P072
Nickel .....	Same .....	7440-02-0	.....
Nickel compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Nickel carbonyl .....	Nickel carbonyl Ni(CO) <sub>4</sub> , (T-4)- .....	13463-39-3	P073
Nickel cyanide .....	Nickel cyanide Ni(CN) <sub>2</sub> .....	557-19-7	P074
Nicotine .....	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)- ...	54-11-5	P075
Nicotine salts .....	.....	.....	P075
Nitric oxide .....	Nitrogen oxide NO .....	10102-43-9	P076
p-Nitroaniline .....	Benzeneamine, 4-nitro- .....	100-01-6	P077
Nitrobenzene .....	Benzene, nitro- .....	98-95-3	U169
Nitrogen dioxide .....	Nitrogen dioxide NO <sub>2</sub> .....	10102-44-0	P078
Nitrogen mustard .....	Ethanamine, 2-chloro-N-(2-chloroethyl)-N-methyl-, N-oxide.	51-75-2	.....
Nitrogen mustard, N-oxide, hydro-chloride salt.	.....	.....	.....
Nitroglycerin .....	1,2,3-Propanetriol, trinitrate .....	55-63-0	P081
p-Nitrophenol .....	Phenol, 4-nitro- .....	100-02-7	U170
2-Nitropropane .....	Propane, 2-nitro- .....	79-46-9	U171
Nitrosamines, N.O.S. <sup>1</sup> .....	.....	35576-91-1D	.....
N-Nitrosodi-n-butylamine .....	1-Butamine, N-butyl-N-nitroso .....	924-16-3	U172
N-Nitrosodiethanolamine .....	Ethanol, 2,2'-(nitrosoimino)bis- .....	1116-54-7	U173
N-Nitrosodiethylamine .....	Ethanamine, N-ethyl-N-nitroso- .....	55-18-5	U174
N-Nitrosodimethylamine .....	Methanamine, N-methyl-N-nitroso- .....	62-75-9	P082

(continued)



# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
N-Nitroso-N-ethylurea .....	Urea, N-ethyl-N-nitroso- .....	759-73-9	U176
N-Nitrosomethylethylamine .....	Ethanamine, N-methyl-N-nitroso-10595-95-6 .....	.....	.....
N-Nitroso-N-methylurea .....	Urea, N-methyl-N-nitroso- .....	684-93-5	U177
N-Nitroso-N-methylurethane .....	Carbamic acid, methylnitroso-, ethyl ester ..	615-53-2	U178
N-Nitrosomethylvinylamine .....	Vinylamine, N-methyl-N-nitroso- .....	4549-40-0	P084
N-Nitrosomorpholine .....	Morpholine, 4-nitroso- .....	59-89-2	.....
N-Nitrosonomocotine .....	Pyridine, 3-(1-nitroso-2-pyrrolidinyl)-, (S) ....	16543-55-8	.....
N-Nitrosopiperidine .....	Piperidine, 1-nitroso- .....	100-75-4	U179
N-Nitrosopyrrolidine .....	Pyrrolidine, 1-nitroso- .....	930-55-2	U180
N-Nitrososarcosine .....	Glycine, N-methyl-N-nitroso- .....	13256-22-9	.....
5-Nitro-o-toluidine .....	Benzenamine, 2-methyl-5-nitro- .....	99-55-8	U181
Octamethylpyrophosphoramidate .....	Diphosphoramidate, octamethyl- .....	152-16-9	P085
Osmium tetroxide .....	Osmium oxide OsO <sub>4</sub> (T-4)- .....	20816-12-0	P087
Paraldehyde .....	1,3,5-Trioxane, 2,4,6-trimethyl- .....	123-63-7	U182
Parathion .....	Phosphorothioic acid, O,O-diethyl O-(4-nitro-phenyl) ester.	56-38-2	P089
Pentachlorobenzene .....	Benzene, pentachloro- .....	608-93-5	U183
Pentachlorodibenzo-p-dioxins .....	.....	.....	.....
Pentachlorodibenzofurans .....	.....	.....	.....
Pentachloroethane .....	Ethane, pentachloro- .....	76-01-7	U184
Pentachloronitrobenzene (PCNB) .....	Benzene, pentachloronitro- .....	82-68-8	U185
Pentachlorophenol .....	Phenol, pentachloro- .....	87-86-5	See F027
Phenacetin .....	Acetamide, N-(4-ethoxyphenyl)- .....	62-44-2	U187
Phenol .....	Same .....	108-95-2	U188
Phenylenediamine .....	Benzenediamine .....	25265-76-3	.....
Phenylmercury acetate .....	Mercury, (acetato-O)phenyl- .....	62-38-4	P092
Phenylthiourea .....	Thiourea, phenyl- .....	103-85-5	P093
Phosgene .....	Carbonic dichloride .....	75-44-5	P095
Phosphine .....	Same .....	7803-51-2	P096
Phorate .....	Phosphorodithioic, O,O-diethyl S-[(ethylthio)methyl] ester.	298-02-2	P094
Phthalic acid esters, N.O.S. <sup>1</sup> .....	.....	.....	.....
Phthalic anhydride .....	1,3-Isobenzofurandione .....	85-44-9	U190
2-Picoline .....	Pyridine, 2-methyl- .....	109-06-8	U191
Polychlorinated biphenyls, N.O.S. <sup>1</sup> .....	.....	.....	.....
Potassium cyanide .....	Potassium cyanide K(CN) .....	151-50-8	P098
Potassium silver cyanide .....	Argentate(1-), bis(cyano-C)-, potassium ....	506-61-6	P099
Pronamide .....	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)- .....	23950-58-5	U192
1,3-Propane sultone .....	1,2-Oxathiolane, 2,2-dioxide .....	1120-71-4	U193
n-Propylamine .....	1-Propanamine .....	107-10-8	U194
Propargyl alcohol .....	2-Propyn-1-ol .....	107-19-7	P102
Propylene dichloride .....	Propane, 1,2-dichloro- .....	78-87-5	U083
1,2-Propylenimine .....	Aziridine, 2-methyl- .....	75-55-8	P067
Propylthiouracil .....	4(1H)-Pyrimidinone, 2,3-dihydro-6-propyl-2-thio- .....	51-52-5	.....

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Pyridine.....	Same.....	110-86-1	U196
Reserpine.....	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-smethyl ester, (3beta,16beta,17alpha,18beta,20alpha)-.	50-55-5	U200
Resorcinol.....	1,3-Benzenediol.....	108-46-3	U201
Saccharin.....	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide.....	81-07-2	U202
Saccharin salts.....	.....	.....	U202
Safrole.....	1,3-Benzodioxole, 5-(2-propenyl)-.....	94-59-7	U203
Selenium.....	Same.....	7782-49-2	.....
Selenium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Selenium dioxide.....	Selenious acid.....	7783-00-8	U204
Selenium sulfide.....	Selenium sulfide SeS <sub>2</sub> .....	7488-56-4	U205
Selenourea.....	Selenourea.....	630-10-4	P103
Silver.....	Same.....	7440-22-4	.....
Silver compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Silver cyanide.....	Silver cyanide Ag(CN).....	506-64-9	P104
Silvex (2,4,5-TP).....	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-.....	93-72-1	See F027
Sodium cyanide.....	Sodium cyanide Na(CN).....	143-33-9	P106
Streptozotocin.....	D-Glucose, 2-deoxy-2-[[[(methylnitrosoamino)carbonyl]amino]-.....	18883-66-4	U206
Strychnine.....	Strychnidin-10-one.....	57-24-9	P108
Strychnine salts.....	.....	.....	P108
TCDD.....	Dibenzob,e[1,4]dioxin, 2,3,7,8-tetrachloro-.....	1746-01-6	.....
1,2,4,5-Tetrachlorobenzene.....	Benzene, 1,2,4,5-tetrachloro-.....	95-94-3	U207
Tetrachlorodibenzo-p-dioxins.....	.....	.....	.....
Tetrachlorodibenzofurans.....	.....	.....	.....
Tetrachloroethane, N.O.S. <sup>1</sup> .....	Ethane, tetrachloro-, N.O.S. ....	25322-20-7	.....
1,1,1,2-Tetrachloroethane.....	Ethane, 1,1,1,2-tetrachloro-.....	630-20-6	U208
1,1,2,2-Tetrachloroethane.....	Ethane, 1,1,2,2-tetrachloro-.....	79-34-5	U209
Tetrachloroethylene.....	Ethene, tetrachloro-.....	127-18-4	U210
2,3,4,6-Tetrachlorophenol.....	Phenol, 2,3,4,6-tetrachloro-.....	58-90-2	See F027
Tetraethyldithiopyrophosphate.....	Thiodiphosphoric acid, tetrathethyl ester.....	3689-24-5	P109
Tetraethyl lead.....	Plumbane, tetraethyl-.....	78-00-2	P110
Tetraethyl pyrophosphate.....	Diphosphoric acid, tetraethyl ester.....	107-49-3	P111
Tetranitromethane.....	Methane, tetranitro-.....	509-14-8	P112
Thallium.....	Same.....	7440-28-0	.....
Thallium compounds, N.O.S. <sup>1</sup> .....	.....	.....	.....
Thallic oxide.....	Thallium oxide Tl <sub>2</sub> O <sub>3</sub> .....	1314-32-5	P113
Thallium(I) acetate.....	Acetic acid, thallium(1+) salt.....	563-68-8	U214
Thallium(I) carbonate.....	Carbonic acid, dithallium(1+) salt.....	6533-73-9	U215
Thallium(I) chloride.....	Thallium chloride TlCl.....	7791-12-0	U216
Thallium(I) nitrate.....	Nitric acid, thallium(1+) salt.....	10102-45-1	U217
Thallium selenite.....	Selenious acid, dithallium(1+) salt.....	12039-52-0	P114
Thallium(I) sulfate.....	Sulfuric acid, dithallium(1+) salt.....	7446-18-6	P115
Thioacetamide.....	Ethanethioamide.....	62-55-5	U218

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Thiofanox .....	2-Butanone, 3,3-dimethyl-1-(methylthio)-, - [(methylamino)carbonyl] oxime.	39196-18-4	P045
Thiomethanol .....	Methanethiol .....	74-93-1	U153
Thiophenol .....	Benzenethiol .....	108-98-5	P014
Thiosemicarbazide .....	Hydrazinecarbothioamide .....	79-19-6	P116
Thiourea .....	Same .....	62-56-6	U219
Thiram .....	Thioperoxydicarbonic diamide [(H <sub>2</sub> N)C(S)] <sub>2</sub> S <sub>2</sub> tetramethyl-	137-26-8	U244
Toluene .....	Benzene, methyl- .....	108-88-3	U220
Toluenediamine .....	Benzenediamine, ar-methyl- .....	25376-45-8	U221
Toluene-2,4-diamine .....	1,3-Benzenediamine, 4-methyl- .....	95-80-7	.....
Toluene-2,6-diamine .....	1,3-Benzenediamine, 2-methyl- .....	823-40-5	.....
Toluene-3,4-diamine .....	1,2-Benzenediamine, 4-methyl- .....	496-72-0	.....
Toluene diisocyanate .....	Benzene, 1,3-diisocyanatomethyl- .....	26471-62-5	U223
o-Toluidine .....	Benzenamine, 2-methyl- .....	95-53-4	U328
o-Toluidine hydrochloride .....	Benzenamine, 2-methyl-, hydrochloride .....	636-21-5	U222
p-Toluidine .....	Benzenamine, 4-methyl- .....	106-49-0	U353
Toxaphene .....	Same .....	8001-35-2	P123
1,2,4-Trichlorobenzene .....	Benzene, 1,2,4-trichloro .....	120-82-1	.....
1,1,2-Trichloroethane .....	Ethane, 1,1,3-trichloro- .....	79-00-5	U227
Trichloroethylene .....	Ethene, trichloro- .....	79-01-6	U228
Trichloromethanethiol .....	Methanethiol, trichloro- .....	75-70-7	P118
Trichloromonofluoromethane .....	Methane, trichlorofluoro- .....	75-69-4	U121
2,4,5-Trichlorophenol .....	Phenol, 2,4,5-trichloro- .....	95-95-4	See F027
2,4,6-Trichlorophenol .....	Phenol, 2,4,6-trichloro- .....	88-06-2	See F027
2,4,5-T .....	Acetic acid, (2,4,5-trichlorophenoxy)- .....	93-76-5	See F027
Trichloropropane, N.O.S. <sup>1</sup> .....	.....	25735-29-9	.....
1,2,3-Trichloropropane .....	Propane, 1,2,3-trichloro- .....	96-18-4	.....
O,O,O-Triethyl phosphorothioate .....	Phosphorothioic acid, O,O,O-triethyl ester ..	126-68-1	.....
1,3,5-Trinitrobenzene .....	Benzene, 1,3,5-trinitro- .....	99-35-4	U234
Tris(1-aziridinyl)phosphine sulfide .....	Aziridine, 1,1',1"- phosphinothioylidynetris-	.....	.....
Tris(2,3-dibromopropyl) phosphate .....	1-Propanol, 2,3-dibromo-, phosphate (3:1)	126-72-7	U235
Trypan blue .....	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-di methyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)]- bis[5-amino-4-hydroxy-, tetrasodium salt.	72-57-1	U236
Uracil mustard .....	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2- chloroethyl)amino]-.	66-75-1	U237
Vanadium pentoxide .....	Vanadium oxide V <sub>2</sub> O <sub>5</sub> .....	13-14-62-1	P120
Vinyl chloride .....	Ethene, chloro- .....	75-01-4	U043
Warfarin .....	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3- oxo- 1-phenylbutyl)-, when present at concentra- tions greater than 0.3%.	81-81-2	U248

(continued)

# Appendix 4-4 (continued)

Common Name	Chemical Abstracts Name	Chemical Abstracts No.	Hazardous Waste No.
Warfarin salts, when present at concentrations less than 0.3%.	.....	.....	U248
Warfarin salts, when present at concentrations greater than 0.3%	.....	.....	P001
Zinc cyanide	Zinc cyanide $Zn(CN)_2$	557-21-1	P121
Zinc phosphide.....	Zinc phosphide $Zn_3P_2$ , when present at concentrations greater than 10%.	1314-84-7	P122
Zinc phosphide.....	Zinc phosphide $Zn_3P_2$ , when present at concentrations of 10% or less.	1314-84-7	U248
<sup>1</sup> The abbreviation N.O.S. (not otherwise specified) signifies those members of the general class not specifically listed by name in this appendix.			

## Appendix 4-5

### Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste (40 CFR 261.33(a) - 261.33(e))

(COMMENT: primary hazardous properties of these materials have been indicated by the letters (t) (toxicity), and (r) (reactivity); absence of a letter indicates that the compound only is listed for acute toxicity.)

Hazardous Waste Number	Substance	
P023	Acetaldehyde, chloro-	
P002	Acetamide, N-(aminothioxomethyl)-	
P057	Acetamide, 2-fluoro-	
P058	Acetic acid, fluoro-, sodium salt	
P002	1-Acetyl-2-thiourea	
P003	Acrolein	
P070	Aldicarb	
P004	Aldrin	
P005	Allyl alcohol	
P006	Aluminum phosphide	(r,t)
P007	5-(Aminomethyl)-3-isoxazolol	
P008	4-Aminopyridine	
P009	Ammonium picrate	(r)
P119	Ammonium vanadate	
P099	Argebtate(1), bis(cyano-C)-, potassium	
P010	Arsenic acid $H^3AsO^4$	
P012	Arsenic oxide $As^2O^3$	
P011	Arsenic oxide $As^2O^5$	
P011	Arsenic pentoxide	
P012	Arsenic trioxide	
P038	Arsine, diethyl	
P036	Arsonous dichloride, phenyl	
P054	Aziridine	
P067	Aziridine, 2-methyl	
P013	Barium cyanide	
P024	Benzenamine, 4-chloro-	
P077	Benzenamine, 4-nitro-	
P028	Benzene, (chloromethyl)-	
P042	1,2-Benzenediol, 4-[1-hydroxy- 2-(methylamino)ethyl]-	(r)
P046	Benzeneethanamine, alpha,alpha- dimethyl-	(r)
P014	Benzenethiol	
P001	2H-1-Benzopyran-2-one,4-hydroxy-3- (3-oxo-1-phenylbutyl)-, and salts when present at concentrations greater than 0.3%	

(continued)

## Appendix 4-5 (continued)

Hazardous Waste Number	Substance
P028	Benzyl chloride
P015	Beryllium
P016	Bis(chloromethyl)ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P021	Calcium cyanide $\text{Ca}(\text{CN})_2$
P022	Carbon disulfide
P095	Carbonic dichloride
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl)thiourea
P027	3-Chloropropionitrile
P029	Copper cyanide
P029	Copper cyanide $\text{Cu}(\text{CN})$
P030	Cyanides (soluble cyanide salts), n.o.s.
P031	Cyanogen
P033	Cyanogen chloride
P033	Cyanogen chloride $(\text{CN})\text{Cl}$
P034	2-Cyclohexyl-4,6-dinitrophenol
P016	Dichloromethyl ether
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P041	Diethyl-p-nitrophenyl phosphate
P040	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	Diisopropyl fluorophosphate (DEP)
P004	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a- hexahydro-, (1alpha, 4alpha,4abeta,5alpha, 8alpha,8abeta)-
P060	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a- hexahydro-, (1alpha, 4alpha,4abeta,5beta, 8beta,8abeta)-
P037	2,7:3,6-Dimethanonaph[2,3b]oxirane, 3,4,5,6,9,9- hexachloro-1a,2,2a,3, 6,6a,7,7a-octahydro-, (1-aalpha, 2beta,2aalpha,3beta,6beta,6aalpha, 7beta,7aalpha)-
P051	2,7:3,6-Dimethanonaph[2,3b]oxirane, octahydro-, (1aalpha,2beta,2abeta, 3alpha,6alpha,6abeta,7beta,7aalpha)-
P044	Dimethoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methy- lamino)carbonyl]oxime
P046	alpha,alpha-Dimethylphenethylamine
P047	4,6-Dinitro-o-cresol and salts
P048	2,4-Dinitrophenol

(continued)

## Appendix 4-5 (continued)

Hazardous Waste Number	Substance	
P020	Dinoseb	
P085	Diphosphoramidate, octamethyl-	
P111	Diphosphoric acid, tetraethyl ester	
P039	Disulfoton	
P049	Dithiobiuret	
P050	Endosulfan	
P088	Endothall	
P051	Endrin	
P051	Endrin and metabolites	
P042	Epinephrine	
P031	Ethanedinitrile	
P066	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester	
P101	Ethyl cyanide	
P054	Ethyleneimine	
P097	Famphur	
P056	Fluorine	
P057	Fluoroacetamide	
p058	Fluoroacetic acid, sodium salt	
p065	Fulminic acid, mercury(2+) salt	(r,t)
P059	Heptachlor	
P062	Hexaethyl tetraphosphate	
p116	Hydrazinecarbothioamide	
P068	Hydrazine, methyl-	
P063	Hydrocyanic acid	
P063	Hydrogen cyanide	
P096	Hydrogen phosphide	
P064	Isocyanic acid, methyl ester	
P060	Isodrin	
P007	3(2H)-Isloxazolone, 5-(aminomethyl)-	
P092	Mercury (acetato-O)phenyl-	
P065	Mercury fulminate	(r,t)
P082	Methanamine, N-methyl-N-nitroso	
P064	Methane, isocyanato-	
P016	Methane, oxybis[chloro-	
P112	Methane, tetranitro-	(r)
P118	Methanethiol, trichloro-	
P050	6,9-Methano-2,4,3-benzodioxathiepen, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-,3-oxide	
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8- heptachloro- 3a,4,7,7a-tetrahydro-	
P066	Methomyl	
P068	Methyl hydrazine	
P064	Methyl isocyanate	

(continued)

## Appendix 4-5 (continued)

Hazardous Waste Number	Substance
P069	2-Methylactonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P073	Nickel carbonyl, (T-4)-
P074	Nickel cyanide
P074	Nickel cyanide Ni (CN) <sub>2</sub>
P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen oxide NO
P078	Nitrogen oxide
P081	Nitroglycerine (r)
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylvinylamine
P074	Nickel cyanide
P085	Octamethylpyrophosphoramide
P087	Osmium oxide
P087	Osmium tetroxide
P088	7-Oxabicyclo[2.2.1]heptane-2,3- dicarboxylic acid
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro
P048	Phenol, 2,4-dinitro
P047	Phenol, 2-methyl-4,6-dinitro- and salts
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro
P009	Phenol, 2,4,6-trinitro-, ammonium salt (r)
P092	Phenylmercury acetate
P093	Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl 4- nitrophenyl ester
P039	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	Phosphorodithioic acid, O,O-dimethyl S[2-(methylamino)-2-oxoethyl] ester
P043	Phosphorofluoric acid, bis(1-methylethyl) -ester
P089	Phosphorothioic acid, O,O-diethyl O- (4-nitrophenyl) ester
P040	Phosphorothioic acid, O,O-diethyl O- pyrazinyl ester
P097	Phosphorothioic acid, O-[4-[(dimethylamino) sulfonyl]phe-nyl] O,O-dimethyl ester

(continued)



## Appendix 4-5 (continued)

Hazardous Waste Number	Substance
P071	Phosphorothioic acid, O,O-dimethyl O- (4-nitrophenyl) ester
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P098	Potassium cyanide K(CN)
P099	Potassium silver cyanide
P070	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbo- nyl]oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl
P081	1,2,3-Propanetriol, trinitrate (r)
P017	2-Propanone, 1-bromo-
P102	Propargyl alcohol
P003	2-Propenal
P005	2-Propen- 1 -ol
P067	1,2-Propylenimine
P102	2-Propyn-1 -ol
P008	4-Pyridinamine
P075	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, (S)-, and salts
P103	Selenourea
P104	Silver cyanide
P104	Silver cyanide Ag(CN)
P105	Sodium azide
P106	Sodium cyanide
P106	Sodium cyanide Na(CN)
P108	Strychnidin-10-one, and salts
P018	Strychnidin 10-one, 2,3-dimethoxy-
P108	Strychnine and salts
P115	Sulfuric acid, dithallium(I) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate
P112	Tetranitromethane (r)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium(III) oxide
P114	Thallium(I) selenite
P115	Thallium(I) sulfate
P109	Thiodiphosphoric acid, tetraethyl ester
P045	Thiofanox
P049	Thiomidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide

(continued)

## Appendix 4-5 (continued)

Hazardous Waste Number	Substance
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-
P093	Thiourea, phenyl-
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide V <sub>2</sub> O <sub>3</sub>
P120	Vanadium pentoxide
P084	Vinylamine, N-methyl-N-nitroso
P001	Warfarin, and salts, when present at concentrations greater than 0.3%
P121	Zinc cyanide
P121	Zinc cyanide Zn(CN) <sub>2</sub>
P122	Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations greater than 0.3%

## Appendix 4-6

### Potentially Incompatible Hazardous Wastes

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes so they can avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequences as noted.

#### Potential Consequences: Heat generation, violent reaction.

##### Group 1-A

Acetylene sludge  
Alkaline caustic liquids  
Alkaline cleaner  
Alkaline corrosive liquids  
Alkaline corrosive battery acid  
Caustic wastewater  
Lime sludge and other corrosive alkalies  
Lime wastewater  
Lime and water  
Spent caustic

##### Group 1-B

Acid sludge  
Acid and water  
Battery acid  
Chemical cleaners  
Electrolyte, acid  
Etching acid liquid or solvent  
Pickling liquor and other corrosive acids  
Spent acid  
Spent mixed acid  
Spent sulfuric acid

#### Potential Consequences: Fire or explosion; generation of flammable hydrogen gas.

##### Group 2-A

Aluminum  
Beryllium  
Calcium  
Lithium  
Magnesium  
Potassium  
Sodium  
Zinc powder  
Other reactive metals and metal hydrides

##### Group 2-B

Any waste in Group 1-A or 1-B

(continued)

## Appendix 4-6 (continued)

**Potential Consequences: Fire, explosion, or heat generation;  
generation of flammable or toxic gases.**

Group 3-A	Group 3-B
Alcohols	Any concentrated waste in Groups 1-A or 1-B
Water	Calcium
	Lithium
	Metal hydrides
	Potassium
	SO <sup>2</sup> Cl <sup>2</sup> , SOCl <sup>2</sup> , PCl <sup>3</sup> , CH <sup>3</sup> SiCl <sup>3</sup>
	Other water-reactive waste

**Potential Consequences: Fire explosion, or violent reaction.**

Group 4-A	Group 4-B
Alcohols	Concentrated Group 1-A or Group 1-B wastes
Aldehydes	
Halogenated hydrocarbons	Group 2-A wastes
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents	

**Potential Consequences: Generation of toxic hydrogen  
cyanide, or hydrogen sulfide gas.**

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

**Potential Consequences: Fire, explosion, or violent reaction.**

Group 6-A	Group 6-B
Chlorates	Acetic acid and other organic acids
Chlorine	
Chlorites	Concentrated mineral acids
Chromic acid	Group 2-A wastes
Hypochlorites	Group 4-A wastes
Nitrates	Other flammable and combustible wastes
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	

Source: "Law, Regulations, and Guidelines for Handling of Hazardous Waste." California Department of Health, February 1975. (As referenced in 40 CFR, Part 264, Appendix V)

(continued)

## Appendix 4-7

### Land Disposal Restricted Wastes and Their Effective Dates. 40 CFR 268, Appendix VII

#### *Part 1--Land Disposal Restricted Wastes and Their Effective Dates*

<b>Waste Code</b>	<b>Waste Category</b>	<b>Effective Date</b>
California list	Liquid hazardous wastes, including free liquids associated with solid or sludge, containing free cyanides at concentrations greater than or equal to 1000 mg/L or certain metals or compounds of these metals greater than or equal to the prohibition levels.	8 July 1987
California list	Liquid (aqueous) hazardous wastes having a pH less than or equal to 2.	8 July 1987
California list	Dilute HOC wastewaters, defined as HOC-waste mixtures that are primarily water and that contain greater than or equal to 1000 mg/L but less than 10,000 mg/L.	8 July 1987
California list	Liquid hazardous waste containing PCBs greater than or equal to 50 ppm.	8 July 1987
California list	Other liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1000 mg.	8 November 1988
RCRA Hazardous Wastes	Those that contain naturally occurring radioactive materials.	8 May 1992
RCRA Listed Wastes	Mixed radioactive/hazardous wastes.	8 May 1992
D001	All	8 August 1990
D002	All	8 August 1990
D003	All	8 August 1990
D004	Wastewater	8 August 1990
D004	Nonwastewaters	8 May 1992
D005	Nonwastewater	8 May 1992
D006	All	8 August 1990
D007	All	8 August 1990
D007	All	8 August 1990
D008	Lead materials before secondary smelting	8 May 1992
D008	All others	8 August 1990
D009	Nonwastewater	8 May 1992
D010	All	8 August 1990
D011	All	8 August 1990
D012	All	8 August 1990
D013	All	8 August 1990
D014	All	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
D015	All	8 August 1990
D016	All	8 August 1990
D017	All	8 August 1990
F001	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 November 1988
F001	All others	8 November 1986
F002 (1,1,2 -trichloroethane)	Wastewater and Nonwastewater	8 August 1990
F002	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 November 1988
F002	All others	8 November 1986
F003	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 November 1988
F003	All others	8 November 1986
F004	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 November 1988
F004	All others	8 November 1986
F005 (benzene, 2-ethoxy ethanol, 2-nitropropane)	Wastewater and Nonwastewater	8 August 1990
F005	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and soils.	8 November 1988
F005	All others	8 November 1986
F006	Wastewater	8 August 1990
F006	Nonwastewater	8 August 1988
F006 (cyanides)	Nonwastewater	8 July 1989
F007	All	8 July 1989
F008	All	8 July 1989
F009	All	8 July 1989
F010	All	8 June 1989
F011 (cyanides)	Nonwastewater	8 Dec 1986
F011	All others	8 July 1989
F012 (cyanides)	Nonwastewater	8 Dec 1989
F012	All others	8 July 1989
F019	All	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
F020	All	8 November 1988
F021	All	8 November 1988
F022	All	8 November 1988
F023	All	8 November 1988
F024 (metals)	Wastewater	8 June 1989
F024 (metals)	Nonwastewater	8 August 1990
F024 \s-2\ub\d\s0	All others	8 June 1989
F025	All	8 August 1990
F026	All	8 November 1988
F027	All	8 November 1988
F028	All	8 November 1988
F039	Wastewater	8 August 1990
F039	Nonwastewater	8 May 1992
K001 (organics) <sup>b</sup>	All	8 August 1988
K001	All others	8 August 1988
K002	All	8 August 1990
K003	All	8 August 1990
K004	Wastewater	8 August 1990
K004 <sup>c</sup>	Nonwastewater	8 August 1990
K005	Wastewater	8 August 1990
K005 <sup>c</sup>	Nonwastewater	8 June 1989
K006	All	8 August 1990
K007	Wastewater	8 August 1990
K007 <sup>c</sup>	Nonwastewater	8 June 1989
K008	Wastewater	8 August 1990
K008 <sup>c</sup>	Nonwastewater	8 August 1988
K009	All	8 June 1989
K010	All	8 June 1989
K011	Wastewater	8 August 1990
K011	Nonwastewater	8 June 1989
K013	Wastewater	8 August 1990
K013	Nonwastewater	8 June 1989
K014	Wastewater	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
K014	Nonwastewater	8 June 1989
K015	Wastewater	8 August 1988
K015	Nonwastewater	8 August 1990
K016	All	8 August 1988
K017	All	8 August 1990
K018	All	8 August 1988
K019	All	8 August 1988
K020	All	8 August 1988
K021	Wastewater	8 August 1990
K021 <sup>c</sup>	Nonwastewater	8 August 1988
K022	Wastewater	8 August 1990
K022	Nonwastewater	8 August 1988
K023	All	8 June 1989
K024	All	8 August 1988
K025	Wastewater	8 August 1990
K025 <sup>c</sup>	Nonwastewater	8 August 1988
K026	All	8 August 1990
K027	All	8 June 1989
K028 (metals)	Nonwastewater	8 August 1990
K028	All others	8 June 1989
K029	Wastewater	8 August 1990
K029	Nonwastewater	8 June 1989
K030	All	8 August 1990
K031	Wastewater	8 August 1990
K031	Nonwastewater	8 May 1992
K032	All	8 August 1990
K033	All	8 August 1990
K034	All	8 August 1990
K035	All	8 August 1990
K036	Wastewater	8 June 1989
K036 <sup>c</sup>	Nonwastewater	8 August 1988
K037 <sup>b</sup>	Wastewater	8 August 1988
K037	Nonwastewater	8 August 1988
K038	All	8 June 1989
K039	All	8 June 1989
K040	All	8 June 1989
K041	All	8 August 1990
K042	All	8 August 1990
K043	All	8 June 1989

(continued)



# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
K044 <sup>c</sup>	All	8 August 1988
K045 <sup>c</sup>	all	8 August 1988
K046 (Nonreactive)	Nonwastewater	8 August 1988
K046	All others	8 August 1990
K047	All	8 August 1988
K048	Wastewater	8 August 1990
K048	Nonwastewater	8 November 1990
K049	Wastewater	8 August 1990
K049	Nonwastewater	8 November 1990
K050	Wastewater	8 August 1990
K050	Nonwastewater	8 November 1990
K051	Wastewater	8 August 1990
K051	Nonwastewater	8 November 1990
K052	Wastewater	8 August 1990
K052	Nonwastewater	8 November 1990
K060	Wastewater	8 August 1990
K060 <sup>c</sup>	Nonwastewater	8 August 1988
K061	Wastewater	8 August 1990
K061	Nonwastewater (low zinc) (interim standard for high zinc remains in effect until 7 August 1991).	8 August 1988
K062	All	8 August 1988
K069 (Non-Calcium Sulfate) <sup>c</sup>	Nonwastewater	8 August 1988
K069	All others	8 August 1990
K071	All	8 August 1990
K073	All	8 August 1990
K083	All	8 August 1990
K084	Wastewater	8 August 1990
K084	Nonwastewater	8 May 1992
K085	All	8 August 1990
K086 (organics) <sup>b</sup>	All	8 August 1988
K086	All others	8 August 1988
K087	All	8 August 1988
K093	All	8 June 1989
K094	All	8 June 1989
K095	Wastewater	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
K095	Nonwastewater	8 June 1989
K096	Wastewater	8 August 1990
K096	Nonwastewater	8 June 1989
K097	All	8 August 1990
K098	All	8 August 1990
K099	All	8 August 1988
K100	Wastewater	8 August 1990
K100 <sup>c</sup>	Nonwastewater	8 August 1988
K101 (organics)	Wastewater	8 August 1988
K101 (metals)	Wastewater	8 August 1990
K101 (organics)	Nonwastewater	8 August 1988
K101 (metals)	Nonwastewater	8 May 1992
K102 (organics)	Wastewater	8 August 1988
K102 (metals)	Wastewater	8 August 1990
K102 (organics)	Nonwastewater	8 August 1988
K102 (metals)	Nonwastewater	8 May 1992
K103	All	8 August 1988
K104	All	8 August 1988
K105	All	8 August 1990
K106	Wastewater	8 August 1990
K106	Nonwastewater	8 May 1992
K113	All	8 June 1989
K114	All	8 June 1989
K115	All	8 June 1989
K116	All	8 June 1989
P001	All	8 August 1990
P002	All	8 August 1990
P003	All	8 August 1990
P004	All	8 August 1990
P005	All	8 August 1990
P006	All	8 August 1990
P007	All	8 August 1990
P008	All	8 August 1990
P009	All	8 August 1990
P010	Wastewater	8 August 1990
P010	Nonwastewater	8 May 1992
P011	Wastewater	8 August 1990
P011	Nonwastewater	8 May 1992
P012	Wastewater	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
P012	Nonwastewater	8 May 1992
P013 (barium)	Nonwastewater	8 August 1990
P013	All others	8 June 1989
P014	All	8 August 1990
P015	All	8 August 1990
P016	All	8 August 1990
P017	All	8 August 1990
P018	All	8 August 1990
P020	All	8 August 1990
P021	All	8 June 1989
P022	All	8 August 1990
P023	All	8 August 1990
P024	All	8 August 1990
P026	All	8 August 1990
P027	All	8 August 1990
P028	All	8 August 1990
P029	All	8 June 1989
P030	All	8 June 1989
P031	All	8 August 1990
P033	All	8 August 1990
P034	All	8 August 1990
P036	Wastewater	8 August 1990
P036	Nonwastewater	8 May 1992
P037	All	8 August 1990
P038	Wastewater	8 August 1990
P038	Nonwastewater	8 May 1992
P039	All	8 June 1989
P040	All	8 June 1989
P041	All	8 June 1989
P042	All	8 August 1990
P043	All	8 June 1989
P044	All	8 June 1989
P045	All	8 August 1990
P046	All	8 August 1990
P047	All	8 August 1990
P048	All	8 August 1990
P049	All	8 August 1990
P050	All	8 August 1990
P051	All	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
P054	All	8 August 1990
P056	All	8 August 1990
P057	All	8 August 1990
P058	All	8 August 1990
P059	All	8 August 1990
P060	All	8 August 1990
P062	All	8 June 1989
P063	All	8 June 1989
P064	All	8 August 1990
P065	Wastewater	8 August 1990
P065	Nonwastewater	8 May 1992
P066	All	8 August 1990
P067	All	8 August 1990
P068	All	8 August 1990
P069	All	8 August 1990
P070	All	8 August 1990
P071	All	8 June 1989
P072	All	8 August 1990
P073	All	8 August 1990
P074	All	8 June 1989
P075	All	8 August 1990
P076	All	8 August 1990
P077	All	8 August 1990
P078	All	8 August 1990
P079	All	8 August 1990
P081	All	8 August 1990
P082	All	8 August 1990
P084	All	8 August 1990
P085	All	8 June 1989
P087	All	8 May 1992
P088	All	8 August 1990
P089	All	8 June 1989
P092	Wastewater	8 August 1990
P092	Nonwastewater	8 May 1992
P093	All	8 August 1990
P094	All	8 June 1989
P095	All	8 August 1990
P096	All	8 August 1990
P099 (silver)	Wastewater	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
P099	All others	8 June 1989
P101	All	8 August 1990
P102	All	8 August 1990
P103	All	8 August 1990
P104 (silver)	Wastewater	8 August 1990
P104	All others	8 June 1989
P105	All	8 August 1990
P106	All	8 June 1989
P108	All	8 August 1990
P109	All	8 June 1989
P110	All	8 August 1990
P111	All	8 June 1989
P112	All	8 August 1990
P113	All	8 August 1990
P114	All	8 August 1990
P115	All	8 August 1990
P116	All	8 August 1990
P118	All	8 August 1990
P119	All	8 August 1990
P120	All	8 August 1990
P121	All	8 June 1989
P122	All	8 August 1990
P123	All	8 August 1990
U001	All	8 August 1990
U002	All	8 August 1990
U003	All	8 August 1990
U004	All	8 August 1990
U005	All	8 August 1990
U006	All	8 August 1990
U007	All	8 August 1990
U008	All	8 August 1990
U009	All	8 August 1990
U010	All	8 August 1990
U011	All	8 August 1990
U012	All	8 August 1990
U014	All	8 August 1990
U015	All	8 August 1990
U016	All	8 August 1990
U017	All	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U018	All	8 August 1990
U019	All	8 August 1990
U020	All	8 August 1990
U021	All	8 August 1990
U022	All	8 August 1990
U023	All	8 August 1990
U024	All	8 August 1990
U025	All	8 August 1990
U026	All	8 August 1990
U027	All	8 August 1990
U028	All	8 June 1989
U029	All	8 August 1990
U030	All	8 August 1990
U031	All	8 August 1990
U032	All	8 August 1990
U033	All	8 August 1990
U034	All	8 August 1990
U035	All	8 August 1990
U036	All	8 August 1990
U037	All	8 August 1990
U038	All	8 August 1990
U039	All	8 August 1990
U041	All	8 August 1990
U042	All	8 August 1990
U043	All	8 August 1990
U044	All	8 August 1990
U045	All	8 August 1990
U046	All	8 August 1990
U047	All	8 August 1990
U048	All	8 August 1990
U049	All	8 August 1990
U050	All	8 August 1990
U051	All	8 August 1990
U052	All	8 August 1990
U053	All	8 August 1990
U055	All	8 August 1990
U056	All	8 August 1990
U057	All	8 August 1990
U058	All	8 June 1989

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U059	All	8 August 1990
U060	All	8 August 1990
U061	All	8 August 1990
U062	All	8 August 1990
U063	All	8 August 1990
U064	All	8 August 1990
U066	All	8 August 1990
U067	All	8 August 1990
U068	All	8 August 1990
U069	All	8 June 1989
U070	All	8 August 1990
U071	All	8 August 1990
U072	All	8 August 1990
U073	All	8 August 1990
U074	All	8 August 1990
U075	All	8 August 1990
U076	All	8 August 1990
U077	All	8 August 1990
U078	All	8 August 1990
U079	All	8 August 1990
U080	All	8 August 1990
U081	All	8 August 1990
U082	All	8 August 1990
U083	All	8 August 1990
U084	All	8 August 1990
U084	All	8 August 1990
U085	All	8 August 1990
U086	All	8 August 1990
U087	All	8 June 1989
U088	All	8 June 1989
U089	All	8 August 1990
U090	All	8 August 1990
U091	All	8 August 1990
U092	All	8 August 1990
U093	All	8 August 1990
U094	All	8 August 1990
U095	All	8 August 1990
U096	All	8 August 1990
U097	All	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U098	All	8 August 1990
U099	All	8 August 1990
U101	All	8 August 1990
U101	All	8 June 1989
U103	All	8 August 1990
U105	All	8 August 1990
U106	All	8 August 1990
U107	All	8 June 1989
U108	All	8 August 1990
U109	All	8 August 1990
U110	All	8 August 1990
U111	All	8 August 1990
U112	All	8 August 1990
U113	All	8 August 1990
U114	All	8 August 1990
U115	All	8 August 1990
U116	All	8 August 1990
U117	All	8 August 1990
U118	All	8 August 1990
U119	All	8 August 1990
U120	All	8 August 1990
U121	All	8 August 1990
U122	All	8 August 1990
U123	All	8 August 1990
U124	All	8 August 1990
U125	All	8 August 1990
U126	All	8 August 1990
U127	All	8 August 1990
U128	All	8 August 1990
U129	All	8 August 1990
U130	All	8 August 1990
U131	All	8 August 1990
U132	All	8 August 1990
U133	All	8 August 1990
U134	All	8 August 1990
U135	All	8 August 1990
U136	Wastewater	8 August 1990
U136	Nonwastewater	8 May 1992
U137	All	8 August 1990

(continued)



# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U138	All	8 August 1990
U140	All	8 August 1990
U141	All	8 August 1990
U142	All	8 August 1990
U143	All	8 August 1990
U144	All	8 August 1990
U145	All	8 August 1990
U146	All	8 August 1990
U147	All	8 August 1990
U148	All	8 August 1990
U149	All	8 August 1990
U150	All	8 August 1990
U151	Wastewater	8 August 1990
U151	Nonwastewater	8 May 1992
U152	All	8 August 1990
U153	All	8 August 1990
U154	All	8 August 1990
U155	All	8 August 1990
U156	All	8 August 1990
U157	All	8 August 1990
U158	All	8 August 1990
U159	All	8 August 1990
U160	All	8 August 1990
U161	All	8 August 1990
U162	All	8 August 1990
U163	All	8 August 1990
U164	All	8 August 1990
U165	All	8 August 1990
U166	All	8 August 1990
U167	All	8 August 1990
U168	All	8 August 1990
U169	All	8 August 1990
U170	All	8 August 1990
U171	All	8 August 1990
U172	All	8 August 1990
U173	All	8 August 1990
U174	All	8 August 1990
U176	All	8 August 1990
U177	All	8 August 1990

(continued)

# Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U178	All	8 August 1990
U179	All	8 August 1990
U180	All	8 August 1990
U181	All	8 August 1990
U182	All	8 August 1990
U183	All	8 August 1990
U184	All	8 August 1990
U185	All	8 August 1990
U186	All	8 August 1990
U187	All	8 August 1990
U188	All	8 August 1990
U189	All	8 August 1990
U190	All	8 June 1989
U191	All	8 August 1990
U192	All	8 August 1990
U193	All	8 August 1990
U194	All	8 August 1990
U196	All	8 August 1990
U197	All	8 August 1990
U200	All	8 August 1990
U201	All	8 August 1990
U202	All	8 August 1990
U203	All	8 August 1990
U204	All	8 August 1990
U205	All	8 August 1990
U206	All	8 August 1990
U207	All	8 August 1990
U208	All	8 August 1990
U209	All	8 August 1990
U210	All	8 August 1990
U211	All	8 August 1990
U212	All	8 August 1990
U213	All	8 August 1990
U214	All	8 August 1990
U215	All	8 August 1990
U216	All	8 August 1990
U217	All	8 August 1990
U218	All	8 August 1990
U219	All	8 August 1990

(continued)

### Appendix 4-7 (continued)

Waste Code	Waste Category	Effective Date
U220	All	8 August 1990
U221	All	8 June 1989
U222	All	8 August 1990
U223	All	8 June 1989
U225	All	8 August 1990
U226	All	8 August 1990
U227	All	8 August 1990
U228	All	8 August 1990
U234	All	8 August 1990
U235	All	8 June 1989
U236	All	8 August 1990
U237	All	8 August 1990
U238	All	8 August 1990
U239	All	8 August 1990
U240	All	8 August 1990
U243	All	8 August 1990
U244	All	8 August 1990
U246	All	8 August 1990
U247	All	8 August 1990
U248	All	8 August 1990
U249	All	8 August 1990

a This table also does not include contaminated soil and debris wastes.

b The standard has been revised in the Third Third Final Rule.

c No land disposal standard has been revised in the Third Third Final Rule.

(continued)

## Appendix 4-7 (continued)

### *Part 2--Summary of Effective Dates of Land Disposal Restrictions for Contaminated Soil and Debris (CSD)*

	<b>Restricted hazardous waste in CSD</b>	<b>Effective date</b>
1.	Solvent-(F001-F005) and dioxin-(F020-F023 and F026-F028) containing soil and debris from CERCLA response of RCRA corrective actions.	8 November 1990
2.	Soil and debris not from CERCLA response or RCRA corrective actions contaminated with less than 1% total solvents (F001-F005) or dioxins (F020-F023 and F026-F028).	8 November 1990
3.	Soil and debris contaminated with California list HOCs from CERCLA response or RCRA corrective actions.	8 November 1990
4.	Soil and debris contaminated with California list HOCs not from CERCLA response or RCRA corrective actions.	8 July 1989
5.	All soil and debris contaminated with First Third wastes for which treatment standards are based on incineration.	8 Aug 1990
6.	All soil and debris contaminated with Second Third wastes for which treatment standards are based on incineration.	8 June 1991
7.	All soil and debris contaminated with Third Third wastes or, First or Second Third "soft hammer" wastes which had treatment standards promulgated in the Third Third rule, for which treatment standards are based on incineration, vitrification, or mercury retorting, acid leaching followed by chemical precipitation, or thermal recovery of metals; as well as all inorganic solids debris contaminated with D004-D011 wastes, and all soil and debris contaminated with mixed RCRA/radioactive wastes.	8 May 1993
8.	Debris that is contaminated with wastes listed in 40 CFR 268.10, 268.11, and 268.12 (including such wastes that are mixed radioactive hazardous wastes), and debris that is contaminated with any characteristic waste for which treatment standards are established (including such wastes that are mixed radioactive hazardous wastes).	8 May 1993
9.	Hazardous soil having treatment standards based on incineration, mercury retorting or vitrification, and soils contaminated with hazardous wastes listed in 40 CFR 268.10, 268.11, 268.12 that are mixed radioactive hazardous wastes.	8 May 1993

#### NOTE:

1. Appendix VII is provided for the convenience of the reader.
2. Contaminated Soil and Debris Rule will be promulgated in the future.

[56 FR 3912, 31 January 1991]

## Appendix 4-8

### Constituent Concentrations in Waste Extract (CCWE)

Waste code	Concentration (mg/L)	
	Wastewater	Nonwastewater
D004*		
Arsenic (CAS 7440-38-2)	NA	5.0***
D005*		
Barium (CAS 7440-39-3)	NA	100
D006*		
Cadmium (CAS 7440-43-9)	NA	1.0
D007*		
Chromium (Total) (CAS 7440-47-32)	NA	5.0
D008*		
Lead (CAS 7439-92-1)	NA	5.0
D009** (Low Mercury Subcategory less than 260 mg/kg)		
Mercury (CAS 7439-97-6)	NA	0.20
D010*		
Selenium (CAS 7782-49-2)	NA	5.7
D011*		
Silver (CAS 7440-22-4)	NA	5.0
F001-F005** (spent solvents)		
Acetone (CAS 67-64-1)	0.05	0.59
n-Butyl alcohol (CAS 71-36-3)	5.0	5.0
Carbon disulfide (CAS 75-15-0)	NA	4.8
Carbon tetrachloride (CAS 56-23-5)	0.05	0.96
Chlorobenzene (CAS 108-90-7)	0.15	0.05
Cresols (and cresylic acid)	2.82	0.75
Cyclohexanone (CAS 108-94-1)	NA	0.75
1,2-Dichlorobenzene (CAS 95-50-1)	0.65	0.125
Ethyl acetate (CAS 141-78-6)	0.05	0.75
Ethylbenzene (CAS 100-41-4)	0.05	0.053
Ethyl ether (CAS 60-29-7)	0.05	0.75
Isobutanol (CAS 78-83-1)	5.0	5.0
Methanol (CAS 67-56-1)	NA	0.75
Methylene chloride (CAS 75-9-2)	0.20	0.96
Methyl ethyl ketone (CAS 78-93-3)	0.05	0.75
Methyl isobutyl ketone (CAS 108-10-1)	0.05	0.33
Nitrobenzene (CAS 98-95-3)	0.66	0.125
Pyridine (CAS 110-86-1)	1.12	0.33
Tetrachloroethylene (CAS 127-18-4)	0.079	0.05
Toluene (CAS 108-88-3)	1.12	0.33
1,1,1-Trichloroethane (CAS 71-55-6)	1.05	0.41

(continued)

# Appendix 4-8 (continued)

Waste code	Concentration (mg/L)	
	Wastewater	Nonwastewater
1,1,2-Trichloro-1,2,2-Trifluoroethane (CAS 76-13-1)	1.05	0.96
Trichloroethylene (CAS 79-01-6)	0.062	0.091
Trichlorofluoromethane (CAS 75-69-4)	0.05	0.96
Xylene	0.05	0.15
<b>F006*</b>		
Cadmium (CAS 7440-43-9)	NA	0.066
Chromium (total) (CAS 7440-47-32)	NA	5.2
Lead (CAS 7439-92-1)	NA	0.51
Nickel (CAS 7440-02-0)	NA	0.32
Silver (CAS 7440-22-4)	NA	0.072
<b>F007*, F008*, F009*, F011* and F012*</b>		
Cadmium (CAS 7440-43-9)	NA	0.066
Chromium (total)(CAS 7440-47-32)	NA	5.2
Lead (CAS 7439-92-1)	NA	0.51
Nickel (CAS 7440-02-0)	NA	0.32
Silver (CAS 7440-22-4)	NA	0.072
<b>F019*</b>		
Chromium (Total) (CAS 7440-47-32)	NA	5.2
<b>F020-F023 and F026-F026 dioxin containing wastes (same for wastewaters and non-wastewaters)</b>		
HxCDD--All Hexachlorodibenzo-p-dioxins		< 1 ppb
HxCDF--All Hexachlorodibenzofurans		< 1 ppb
PeCDD--All Pentachlorodibenzo-p-dioxins		< 1 ppb
PeCDF--All Pentachlorodibenzofurans		< 1 ppb
TCDD--All Tetrachlorodibenzo-p-dioxins		< 1 ppb
TCDF--All Tetrachlorodibenzofurans		< 1 ppb
2,4,5-Trichlorophenol (CAS 95-95-4)		< 1 ppm
2,4,6-Trichlorophenol (CAS 86-06-2)		< 0.05 ppm
2,3,4,6-Tetrachlorophenol (CAS 58-90-2)		< 0.05 ppm
Pentachlorophenol (CAS 87-66-5)		< 0.01 ppm
<b>F024*</b>		
Chromium (total) (CAS 7440-47-32)	NA	0.073
Lead (CAS 7439-92-1)	NA	Reserved
Nickel (CAS 7440-02-0)	NA	0.088
<b>F037*</b>		
Chromium(total)	NA	1.7
Nickel	NA	0.20
<b>F038*</b>		
Chromium(total)	NA	1.7
Nickel	NA	0.20

(continued)

# Appendix 4-8 (continued)

Waste code	Concentration (mg/L)	
	Wastewater	Nonwastewater
<b>F039*</b>		
Antimony (CAS 7440-36-0)	NA	0.23
Arsenic (CAS 7440-38-2)	NA	5.0
Barium (CAS 7440-39-3)	NA	52
Cadmium (CAS 7440-43-9)	NA	0.066
Chromium (CAS 7440-47-32)	NA	5.2
Lead (CAS 7439-92-1)	NA	0.51
Mercury (CAS 7439-97-6)	NA	0.025
Nickel (CAS 7440-02-0)	NA	0.32
Selenium (CAS 7782-49-2)	NA	5.7
Silver (CAS 7440-22-4)	NA	0.072
<b>K001*</b>		
Lead (CAS 7439-92-1)	NA	0.51
<b>K002*, K003*, K004*, and K005*</b>		
Chromium(Total) (CAS 7440-47-32)	NA	0.094
Lead (CAS 7439-92-1)	NA	0.37
<b>K006* (anhydrous)</b>		
Chromium (Total) (CAS 7440-47-32)	NA	0.094
Lead (CAS 7439-92-1)	NA	0.37
<b>K006* (hydrated)</b>		
Chromium (Total) (CAS 7440-47-32)	NA	5.2
<b>K007* and K008*</b>		
Chromium(Total) (CAS 7440-47-32)	NA	0.094
Lead (CAS 7439-92-1)	NA	0.37
<b>K015*</b>		
Chromium(Total) (CAS 7440-47-32)	NA	1.7
Nickel (CAS 7440-02-0)	NA	0.2
<b>K021*</b>		
Antimony (CAS 7440-36-0)	NA	0.23
<b>K022*</b>		
Chromium(Total) (CAS 7440-47-32)	NA	5.2
Nickel (CAS 7440-02-0)	NA	0.32
<b>K028*</b>		
Chromium(Total) (CAS 74440-47-32)	NA	0.073
Lead (CAS 7439-92-1)	NA	0.021
Nickel (CAS 7440-02-0)	NA	0.088
<b>K031*</b>		
Arsenic (CAS 7440-38-2)	NA	5.6*
<b>K046*</b>		
Lead (CAS 7439-92-1)	NA	0.18

(continued)

# Appendix 4-8 (continued)

Waste code	Concentration (mg/L)	
	Wastewater	Nonwastewater
K048*, K049*, K050*, K051*, and K052*		
Chromium(Total) (CAS 7440-47-32)	NA	1.7
Nickel (CAS 7440-02-0)	NA	0.20
K061*		
antimony	NA	2.1
arsenic	NA	0.055
barium	NA	7.6
beryllium	NA	0.014
cadmium	NA	0.19
chromium (total)	NA	0.33
lead	NA	0.37
mercury	NA	0.009
nickel	NA	5.
selenium	NA	0.16
silver	NA	0.3
thallium	NA	0.078
zinc	NA	5.3
K062*		
Chromium (Total) (CAS 7440-47-32).	NA	0.094
Lead (CAS 7439-92-1)	NA	0.37
K069** (Calcium Sulfate subcategory)		
Cadmium (CAS 7440-43-9)	NA	0.14
Lead (CAS 7439-92-1)	NA	0.24
K071*		
Mercury (CAS 7439-97-6)	NA	0.025
K083*		
Nickel (CAS 7440-02-2)	NA	0.088
K084*		
Arsenic (CAS 7440-38-2)	NA	5.6*
K086*		
Chromium(Total) (CAS 7440-47-32)	NA	0.094
Lead (CAS 7439-92-1)	NA	0.37
K087*		
Lead (CAS 7439-92-1)	NA	0.51
K100*		
Cadmium (CAS 7440-43-9)	NA	0.066
Chromium(Total) (CAS 7440-47-32)	NA	5.2
Lead (CAS 7439-92-1)	NA	0.51
K101* and K102*		
Arsenic (CAS 7440-38-2)	NA	5.6*

(continued)



# Appendix 4-8 (continued)

Waste code	Concentration (mg/L)	
	Wastewater	Nonwastewater
K106** (Low Mercury Subcategory--less than 260 mg/kg residues from RMERC) Mercury (CAS 7439-97-6)	NA	0.020
K106** (Low Mercury Subcategory--less than 260 mg/kg that are not residues from RMERC) Mercury (CAS 7439-97-6)	NA	0.025
K115* Nickel (CAS 7440-02-0)	NA	0.32
P010* (Arsenic acid)** Arsenic (CAS 7440-38-2).	NA	5.6*
P011* (Arsenic pentoxide) Arsenic (CAS 7440-38-2).	NA	5.6*
P012* (Arsenic trioxide) Arsenic (CAS 7440-38-2)	NA	5.6*
P013* (Barium cyanide) Barium (CAS 7440-39-3)	NA	52
P036* (Dichlorophenylarsine) Arsenic (CAS 7440-38-2)	NA	5.6*
P038* (Diethylarsine) Arsenic (CAS 7440-38-2)	NA	5.6*
P065** (Low Mercury Subcategory--less than 260 mg/kg Mercury residues from RMERC) (mercury fulminate) Mercury (CAS 7439-97-6)	NA	0.20
P065** (Low Mercury Subcategory--less than 260 mg/kg Mercury incinerator residues (not residues from RMERC) (Mercury fulminate) Mercury (CAS 7439-97-6)	NA	0.025
P073* (Nickel carbonyl) Nickel (CAS 7440-02-0)	NA	0.32
P074* (Nickel cyanide) Nickel (CAS 7440-02-0)	NA	0.32
P092** (Low Mercury Subcategory--less than 260 mg/kg Mercury residues from RMERC) (Phenyl mercury acetate) Mercury (CAS 7439-97-6)	NA	0.20
P092** (Low Mercury Subcategory--less than 260 mg/kg Mercury-incinerator residues (not residues from RMERC) (Phenyl mercury acetate) Mercury (CAS 7439-97-6)	NA	0.025
P099* (Potassium silver cyanide) Silver (CAS 7440-22-4)	NA	0.072

(continued)

# Appendix 4-8 (continued)

Waste code	Concentration (mg/L)	
	Wastewater	Nonwastewater
P103* (Selenourea) Selenium (CAS 7782-49-2)	NA	5.7
P104* (Silver cyanide) Silver (CAS 7440-22-4)	NA	0.072
P110* (Tetraethyl lead) Lead (CAS 7439-92-1)	NA	0.51
P114* (Thallium selenite) Selenium (CAS 7782-49-2)	NA	5.7
U032* (Calcium chromate) Chromium(Total) (CAS 7440-47-32)	NA	0.094
U051* (Creosote) Lead (CAS 7439-92-1)	NA	0.51
U136* (Cacodylic acid) Arsenic (CAS 7440-38-2)	NA	5.6*
U144* (Lead acetate) Lead (CAS 7439-92-1)	NA	0.51
U145* (Lead phosphate) Lead (CAS 7439-92-1)	NA	0.51
U146* (Lead subacetate) Lead (CAS 7439-92-1)	NA	0.51
U151** (Low Mercury Subcategory--less than 260 mg/kg Mer- cury-- residues from RMERC) (mercury) Mercury (CAS 7439-97-6)	NA	0.20
U151** (Low Mercury Subcategory--less than 260 mg/kg Mer- cury-- that are not residues form RMERC) (mercury) Mercury (CAS 7439-97-6)	NA	0.025
U204* (Selenium dioxide) Selenium (CAS 7782-49-2)	NA	5.7
U205* (Selenium sulfide) Selenium (CAS 7782-49-2)	NA	5.7

\*See also Table CCW in 268.43

\*\*See also Table 2 in 268.42

\*\*\*These treatment standards have been based on EP Leachate analysis but this does not preclude the use of TCLP analysis.

## Appendix 4-9

### Treatment Methods Expressed as Specific Technologies (40 CFR 268.42)

**Chart 1: Technology Codes and Description of Technology-Based Standards**

Technology code	Description of technology-based standards
ADGAS	Venting of compressed gases into an absorbing or reacting media (i.e., solid or liquid)--venting can be accomplished through physical release utilizing valves/piping; physical penetration of the container; and/or penetration through detonation.
AMLGM	Amalgamation of liquid, elemental mercury contaminated with radioactive materials utilizing inorganic reagents such as copper, zinc, nickel, gold, and sulfur that result in a nonliquid, semi-solid amalgam and thereby reducing potential emissions of elemental mercury vapors to the air.
BIODG	Biodegradation of organics or non-organics (i.e., degradable inorganics that contain the elements of phosphorus, nitrogen, and sulfur) in units operated under either aerobic or anaerobic conditions such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the biodegradation of many organic constituents that cannot be directly analyzed in wastewater residues).
CARBN	Carbon adsorption (granulated or powered) of non-metallic inorganics, organo-metallics, and/or organic constituents, operated such that a surrogate compound or indicator parameter has not undergone breakthrough (e.g., Total Organic Carbon can often be used as an indicator parameter for absorption of many organic constituents that cannot be directly analyzed in wastewater residues). Breakthrough occurs when the carbon has become saturated with the constituent (or indicator parameter) and substantial change in adsorption rate associated with that constituent occurs.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

## Appendix 4-9 (continued)

Technology code	Description of technology-based standards
CHOXD	Chemical or electrolytic oxidation utilizing the following oxidation reagents (or waste reagents) or combinations of reagents: (1) Hypochlorite (e.g. b;each); (2) chlorine; (3) chlorine dioxide; (4) ozone or UV (ultraviolet light) assisted ozone; (5) peroxides; (6) persulfates; (7) perchlorates; (8) permangantes; and/or (9) other oxidizing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as as indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues). Chemical oxidation specifically indicates what is commonly referred to as alkaline chlorination.
CHRED	Chemical reduction utilizing the following reducing reagents (or waste reagents) or combinations of reagents: (1) Sulfur dioxide; (2) sodium, potassium, or alkali salts or sulfides, bisulfites, metabisulfites, and polyethylene glycols (e.g.NaPEG and KPEG); (3) sodium hydrosulfide; (4) ferrous salts; and/or (5) other reducing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Halogens can often be used as an indicator parameter for the reduction of many halogenated organic constituents that cannot be directly analyzed in wastewater residues). Chemical reduction is commonly used for the reduction of hexavalent chromium to the trivalent state.
DEACT	Deactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.
FSUBS	Fuel substitution in units operated in accordance with applicable technical operating requirements.
HLVIT	Vitrification of high level mixed radioactive wastes in units in compliance with all applicable radioactive protection requirements under control of the Nuclear Regulatory Commission.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

## Appendix 4-9 (continued)

Technology code	Description of technology-based standards
IMERC	Incineration of wastes containing organics and mercury in units operated in accordance with the technical operating requirements of 40:264 subpart O and part 265 subpart O. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
INCIN	Incineration in units operated in accordance with the technical operating requirements of 40:264 subpart O and part 265 subpart O.
LLEXT	Liquid-liquid extraction (often referred to as solvent extraction) of organics from liquid wastes into an immiscible solvent for which the hazardous constituents have a greater solvent affinity, resulting in an extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and a raffinate (extracted liquid waste) proportionately low in organics that must undergo further treatment as specified in the standard.
MACRO	Macroencapsulation with surface coating materials such as polymeric organic (e.g. resins and plastics) or with a jacket or inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40:260.10.
NEUTRO	Neutralization with the following reagents (or waste reagents) or combination or reagents: (1) Acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals.
NLDBR	No land disposal based on recycling.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

## Appendix 4-9 (continued)

Technology code	Description of technology-based standards
PRECP	Chemical precipitation of metals and other inorganics as insoluble precipitates of oxides, hydroxides, carbonates, sulfates, chlorides, fluorides, or phosphates. The following reagents (or waste reagents) are typically used alone or in combination: (1) Lime (i.e., containing oxides and/or hydroxides of calcium and/or magnesium; (2) caustic (i.e., sodium and/or potassium hydroxides; (3) soda ash (i.e., sodium carbonate); (4) sodium sulfide; (5) ferric sulfate or ferric chloride; (6) alum; or (7) sodium sulfate. Additional flocculating, coagulation or similar reagents/processes that enhance sludge dewatering characteristics are not precluded from use.
RBERY	Thermal recovery of Beryllium.
RCGAS	Recovery/reuse of compressed gases including techniques such as reprocessing of the gases for reuse/resale; filtering/adsorption of impurities; remixing for direct reuse or resale; and use of the gas as a fuel source.
RCORR	Recovery of acids or bases utilizing one or more of the following recovery technologies: (1) Distillation (i.e., thermal concentration); (2) ion exchange; (3) resin or solid adsorption; (4) reverse osmosis; and/or (5) incineration for the recovery of acid--Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RLEAD	Thermal recovery of lead in secondary lead smelters.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

### Appendix 4-9 (continued)

Technology code	Description of technology-based standards
RMERC	Retorting or roasting in a thermal processing unit capable of volatilizing mercury and subsequent condensing the volatilized mercury for recovery. The retorting or roasting in a thermal unit (or facility) must be subject to one or more of the following: (a) a National Emissions Standard for Hazardous Air Pollutants (NES-HAP) for mercury; (b) a Best Available Control Technology (BACT) or a Lowest Achievable Emission Rate (LAER) standard for mercury imposed pursuant to a Prevention of Significant Deterioration (PSD) permit; or (c) a state permit that establishes emission limitations (within meaning of section 302 of the Clean Air Act) for mercury. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
RMETL	Recovery of metals or inorganics utilizing one or more of the following direct physical/removal technologies: (1) ion exchange; (2) resin or solid (i.e., zeolites) adsorption; (3) reverse osmosis; (4) chelation/solvent extraction; (5) freeze crystallization; (6) ultrafiltration and/or (7) simple precipitation (i.e., crystallization)--Note: This does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RORGS	Recovery of organics utilizing one or more of the following technologies: (1) Distillation; (2) thin film evaporation; (3) steam stripping; (4) carbon adsorption; (5) critical fluid extraction; (6) liquid-liquid extraction; (7) precipitation/crystallization (including freeze crystallization); or (8) chemical phase separation techniques (i.e., addition of acids, bases, demulsifiers, or similar chemicals);--Note: this does not preclude the use of other physical phase separation techniques such as a decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RTHRM	Thermal recovery of metals or inorganics from nonwastewaters in units identified as industrial furnaces according to 40:260.10 (1), (6), (7), (11), and (12) under the definition of "industrial furnaces".
RZINC	Resmelting in high temperature metal recovery units for the purpose of recovery of zinc.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)

### Appendix 4-9 (continued)

Technology code	Description of technology-based standards
STABL	Stabilization with the following reagents (or waste reagents) or combinations of reagents: (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust)--this does not preclude the addition of reagents (e.g., iron slats, silicates, and clays) designed to enhance the set/cure time and/or compressive strength, or to overall reduce the leachability of the metal or inorganic.
SSTRP	Steam stripping of organics from liquid wastes utilizing direct application of steam to the wastes operated such that liquid and vapor flow rates, as well as, temperature and pressure ranges have been optimized, monitored, and maintained. These operating parameters are dependent upon the design parameters of the unit such as, the number of separation stages and the internal column design. Thus, resulting in a condensed extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and an extract wastewater that must undergo further treatment as specified in the standard.
WETOX	Wet air oxidation performed in units such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues).
WTRRX	Controlled reaction with water for highly reactive inorganic or organic chemicals with precautionary controls for protection of workers from potential violent reactions as well as precautionary controls for potential emissions of toxic/ignitable levels of gases released during the reaction.

**Note 1:** When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and so on.

**Note 2:** When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

(continued)



# Appendix 4-9 (continued)

## Chart 2: Technology-Based Standards by RCRA Waste Codes

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
D001 Ignitable liquids based on 261.21(a)(1) waste-waters	DEACT	NA
D001 Ignitable liquids based on 261.21(a)(1) Low TOC ignitable liquids subcategory Less than 10% TOC	NA	DEACT
D001 Ignitable Liquids based on 261.21(a)(1) High TOC ignitable liquids subcategory Greater than or equal to 10% TOC	NA	FSUBS; RORGS or INCIN
D001 Ignitable compressed gases based on 261.21(a)(2)	NA	DEACT***
D001 Ignitable reactives based on 261.21(a)(4)	NA	DEACT
D002 Acid subcategory based on 261.22(a)(1)	DEACT	DEACT
D002 Akaline subcategory based on 261.22(a)(1)	DEACT	DEACT
D002 Other corrosives based on 261.22(a)(2)	DEACT	DEACT
(NOTE: the following language under D003 reac-tive sulfides wastewater, "... but not including dilution as a substitute for adequate treatment," is suspended until 6-17-93; see FR 14319 3-17-93)		
D003 Reactive sulfides based on 261.23(a)(5) but not including dilution as a substitute for adequate treatment	DEACT	DEACT
D003 Explosives based on 261.23(a)(6--8)	DEACT	DEACT
D003 Water reactives based on 261.23(a)(2--4)	NA	DEACT
D003 Other reactives based on 261.23(a)(1)	DEACT	DEACT

(continued)

**Appendix 4-9 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
D006 (CAS 7440-43-9) Cadmium containing batteries	NA	RTHRM
D008 (CAS 7439-92-1) Lead acid batteries that are identified as RCRA hazardous waste and that are not excluded from regulation (see 40:268.80)	NA	RLEAD
D009*** (CAS 7439-97-6) Mercury (High Mercury subcategory--greater than or equal to 260 mg/kg total mercury and organics (and are not incinerator residues))	NA	IMERC; or RMERC
D009*** (CAS 7439-97-6) Mercury (High Mercury subcategory--greater than or equal to 260 mg/kg total mercury inorganics (including incinerator residues and residues from RMERC))	NA	RMERC
D012** (CAS 72-20-8) Endrin	BIODG; or INCIN	NA
D013** (CAS 58-89-9) Lindane	CARBN; or INCIN	NA
D014** (CAS 72-43-5) Methoxychlor	WETOX; or INCIN	NA
D015** (CAS 8001-35-1) Toxaphene	BIODG; or INCIN	NA
D016** (CAS 94-75-7) 2,4-D	CHOXD; BIODG or INCIN	NA
D017** (CAS 93-72-1) 2,4,5-TP	CHOXD or INCIN	NA
F005*** (CAS 79-46-9) 2-Nitropropane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
F005*** (CAS 110-80-5) 2-Ethoxyethanol	BIODG; or INCIN	INCIN
F024***	INCIN	INCIN
K025 Distillation bottoms from the production of nitrobenzene by the nitration of benzene	LLEXT fb SSTRP fb CARBN; or INCIN	INCIN

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
K026 Stripping still tails form the production of methyl ethyl pyridines	INCIN	INCIN
K027 Centrifuge and distillation residues from toluene diisocyanate production	CARBN or INCIN	FSUBS or INCIN
K039 Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	CARBN or INCIN	FSUBS or INCIN
K044 Wastewater treatment sludges from the manufacturing and processing of explosives	DEACT	DEACT
K045 Spent carbon from the treatment of wastewater containing explosives	DEACT	DEACT
K047 Pink/red water from TNT operations	DEACT	DEACT
K069*** Emission control dust/sludge from secondary lead smelting: Non-Calcium Sulfate Subcategory	NA	RLEAD
K106*** Wastewater treatment sludge from the mercury cell process in chlorine production: (High mercury subcategory--greater than or equal to 260 mg/kg total mercury.)	NA	RMERC
K107 Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K108 Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethyl-hydrazine (UDMH) from carboxylic acid hydrazides.	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K109 Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHXOD fb CARBN; or BIODG fb CARBN	INCIN

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
K110 Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K112 Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K113 Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	CARBN; or INCIN	FSUBS; or INCIN
K114 Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	CARBN; or INCIN	FSUBS; or INCIN
K115 Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	CARBN; or INCIN	FSUBS; or INCIN
K116 Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine	CARBN; or INCIN	FSUBS; or INCIN
K123 Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K124 Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K125 Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K126 Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylene bisdithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN

(continued)

### Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P001 (CAS 81-81-2) Warfarin (>0.3%)	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P002 (CAS 591-08-2) 1-Acetyl-2-thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P003 (CAS 107-02-8) Aceolein	NA	FSUBS; or INCIN
P005 (CAS 107-18-6) Allyl alcohol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P006 (CAS 20859-73-8) Aluminum phosphide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
P007 (CAS 2763-96-4) 5-Aminoethyl 3-isoxazolol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P008 (CAS 504-24-5) 4-Aminopyridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P009 (CAS 131-74-8) Ammonium picrate	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P014 (CAS 108-98-5) Thiophenol (Benzebe thiol)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P015 (CAS 7440-41-7) Berylliumdust	RMETL; or RTHRM	RMETL; or RTHRM
P016 (CAS 542-88-1) Bis(chloromethyl)ether	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P017 (CAS 598-31-2) Bromoacetone	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P018 (CAS 357-57-3) Brucine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P022** (CAS 75-15-0) Carbon disulfide	NA	INCIN

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P023 (CAS 107-20-0) Chloroacetaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P026 (CAS 5344-82-1) 1-(o-Chlorophenyl) thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P027 (CAS 542-76-7) 3-Chloropropionitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P028 (CAS 100-44-7) Benzyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P031 (CAS 460-19-5) Cyanogen	CHOXD; WETOX or INCIN	CHOXD; WETOX or INCIN
P033 (CAS 506-77-4) Cyanogen chloride	CHOXD; WETOX or INCIN	CHOXD; WETOX or INCIN
P034 (CAS 131-89-5) 2-Cyclohexyl-4,6-dinitrophenol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P040 (CAS 297-97-2) O,O-Diethyl O-pyrzinyI phosphorothioate	CARBN; or INCIN	FSUBS; or INCIN
P041 (CAS 311-45-5) Diethyl-p-nitrophenyl phosphate	CARBN; or INCIN	FSUBS; or INCIN
P042 (CAS 51-43-4) Epinephrine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P043 (CAS 55-91-4) Diisopropyl fluorophosphate (DFP)	CARBN; or INCIN	FSUBS; or INCIN
P044 (CAS 60-51-5) Dimethoate	CARBN; or INCIN	FSUBS; or INCIN
P045 (CAS 39196-18-4) Thiofanox	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P046 (CAS 122-09-8) alpha, alpha-Dimethylphenethylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P047 (CAS 534-52-1) 4,6-Dinitro-o-cresol salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P049 (CAS 541-53-7) 2,4-Dithioburet	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P054 (CAS 151-56-4) Aziridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P056** (CAS 7782-41-4) Fluorine	NA	ADGAS fb NEUTR
P057 (CAS 640-19-7) Fluoroacetamide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P058 (CAS 62-74-8) Fluoroacetic acid, sodium salt	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P062 (CAS 757-58-4) Hexaethyltetraphosphate	CARBN; or INCIN	FSUBS; or INCIN
P064 (CAS 624-83-9) Isocyanic acid, ethyl ester	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P065*** (CAS 628-86-4) Mercury fulminate: (High Mercury Subcategory- greater than or equal to 260 mg/kg total Mer- cury either incinerator residues or residues from RMERC)	NA	RMERC
P065*** (CAS 628-86-4) Mercury fulminate: (All Nonwastewaters that are not incinerator residues from RMERC; regard- less of Mercury content)	NA	IMERC
P066 (CAS 16752-77-5) Methomyl	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P067 (CAS 75-55-8) 2-Methylaziridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P068 (CAS 60-34-4) Methyl hydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P069 (CAS 75-86-5) Methylactonitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P070 (CAS 116-06-3) Aldicarb	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P072 (CAS 86-88-4) 1-Naphthyl-2-thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P075 (CAS 54-11-5) Nicotine and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P076 (CAS 10102-43-9) Nitric oxide	ADGAS	ADGAS
P078 (CAS 10102-44-0) Nitrogen dioxide	ADGAS	ADGAS
P081 (CAS 55-63-0) Nitroglycerin	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P078 (CAS 10102-44-0) Nitrogen dioxide	ADGAS	ADGAS
P081 (CAS 55-63-0) Nitroglycerin	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P082** (CAS 62-75-9) N-Nitrosodimethylamine	NA	RMERC
P084 (CAS 4549-40-0) N-Nitrosomethylvinylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P085 (CAS 152-16-9) Octamethylpyrophosphoramidate	CARBN; or INCIN	FSUBS; or INCIN
P087 (CAS 20816-12-0) Osmium tetroxide	RMETL; or RTHRM	RMETL; or RTHEM
P088 (CAS 145-73-3) Endothall	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN

(continued)



# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P092*** (CAS 62-38-4) Phenyl mercury acetate: (High Mercury Subcategory - greater than or equal to 260 mg/kg total Mercury - either incinerator residues or residues from RMERC)	NA	REMEC
P092*** (CAS 62-38-4) Phenyl mercury acetate: (All nonwastewaters that are not incinerator residues and are not residues from RMERC: regardless of Mercury Content)	NA	IMERC; or RMERC
P093 (CAS 103-85-5) N-Phenylthiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P095 (CAS 75-44-5) Phosgene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P096 (CAS 7803-51-2) Phosphine	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
P102 (CAS 107-19-7) Propargyl alcohol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P105 (CAS 26628-22-8) Sodium azide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; or INCIN
P108 (CAS 57-24-9) Strychnine and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P109 (CAS 3689-24-5) Tetraethyldithiopyrophosphate	CARBN; or INCIN	FSUBS; or INCIN
P112 (CAS 509-14-8) Tetranitromethane	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P113** (CAS 1314-32-5) Thallic oxide	NA	RTHRM; or STABL
P115** (CAS 7446-18-6) Thallium (1) sulfate	NA	RTHRM; or STABL
P116 (CAS 79-19-6) Thiosemicarbazide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
P118 (CAS 75-70-7) Trichloromethanethiol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P119** (CAS 7803-55-8)	NA	STABL
P120** (CAS 1314-62-1) Vanadium pentoxide	NA	STABL
P122 (CAS 1314-84-7) Zinc Phosphide (>10%)	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U001 (CAS 75-07-0) Acetaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U003** (CAS 75-05-8) Acetonitrile	NA	INCIN
U006 (CAS 75-36-5) Acetyl Chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U007 (CAS 79-06-1) Acrylamide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U008 (CAS 79-10-7) Acrylic acid	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U010 (CAS 50-07-7) Mitomycin C	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U011 (CAS 61-82-5) Amitrole	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U014 (CAS 492-80-8) Auramine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U015 (CAS 115-02-6) Azaserine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U016 (CAS 225-51-4) Benz(c)acridine	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN

(continued)

**Appendix 4-9 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U017 (CAS 98-87-3) Benzal chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U020 (CAS 98-09-9) Benzenesulfonyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U021 (CAS 92-87-5) Benzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U023 (CAS 98-07-7) Benzotrichloride	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U026 (CAS 494-03-1) Chlomaphazin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U033 (CAS 353-50-4) Carbonyl fluoride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U034 (CAS 75-87-6) Trichloroacetaldehyde (Chloral)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U035 (CAS 305-03-3) Chlorambucil	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U038** (CAS 510-15-6) Chlorobenzilate	NA	INCIN
U041 (CAS 106-89-8) 1-Chloro-2,3-epoxypropane (Epichlorohydrin)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U042** (CAS 110-75-8) 2-Chloroethyl vinyl ether	NA	INCIN
U046 (CAS 107-39-2) Chloromethyl methyl ether	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U049 (CAS 3165-93-3) 4-Chloro-o-toluidine hydrochloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

**Appendix 4-9 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U053 (CAS 4170-30-3) Crotonaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U055 (CAS 98-82-8) Cumene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U056 (CAS 110-82-7) Cyclohexane	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U057** (CAS 108-94-1) Cyclohexanone	NA	FSUBS; or INCIN
U058 (CAS 50-18-0) Cyclophosphamide	CARBN; or INCIN	FSUBS; or INCIN
U059 (CAS 20830-81-3) Daunomycin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U062 (CAS 2303-16-4) Diallate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U064 (CAS 189-55-9) 1,2,7,8-Dibenzopyrene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS;
U073 (CAS 91-94-1) 3,3'-Dichlorobenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U074 (CAS 1476-11-5) cis-1,4-Dichloro-2-butylene trans-1,4-Dichloro-2-butylene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U085 (CAS 1464-53-5) 1,2:3,4-Diepoxybutane	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U086 (CAS 1615-80-1) N,N-Diethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U087 (CAS 3288-58-2) O,O-Diethy S-methyldithiophosphate	CARBN; or INCIN	FSUBS; or INCIN
U089 (CAS 56-53-1) Diethy stilbestrol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U090 (CAS 94-58-6) Dihydrosafrole	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U091 (CAS 119-9-4) 3,3'-Dimethoxybenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U092 (CAS 124-40-3) Dimethylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U093** (CAS 621-90-9) p-Dimethylaminoazobenzene	NA	INCIN
U094 (CAS 57-97-6) 7,12-Dimethy benz(a)anthracene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U095 (CAS 119-93-7) 3,3'-Dimethylbenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U096 (CAS 80-15-9) a,a-Dimethyl benzyl hydroperoxide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U097 (CAS 79-44-7) Dimethylcarbonyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U098 (CAS 57-14-7) 1,1-Dimethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U099 (CAS 540-73-8) 1,2-Dimethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U103 (CAS 77-78-1) Dimethyl sulfate	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U109 (CAS 122-66-7) 1,2-Diphenylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U110 (CAS 142-84-7) Dipropylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

**Appendix 4-9 (continued)**

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U113 (CAS 140-88-5) Ethyl acrylate	(WETOX or CHOXD) fb CARBN; or INCIN	FUSBS; or INCIN
U114 (CAS 111-54-6) Ethylene bis-dithiocarbamic acid	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U115 (CAS 75-21-8) Ethylene oxide	(WETOX or CHOXD) fb CARBN; or INCIN	CHOXD; or INCIN
U116 (CAS 96-45-7) Ethylene thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U119 (CAS 62-50-0) Ethyl methane sulfonate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U122 (CAS 50-00-0) Formaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U123 (CAS 64-18-6) Formic acid	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U124 (CAS 110-00-9) Furan	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U125 (CAS 98-01-1) Furfural	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U126 (CAS 765-34-4) Glycidaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U132 (CAS 70-30-4) Hexachlorophenene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U133 (CAS 302-01-2) Hydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U134** (CAS 7664-39-3) Hydrogen Flouride	NA	ADGAS fb NEUTR; or NEUTR

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U135 (CAS 7783-06-4) Hydrogen Sulfide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U143 (CAS 303-34-4) Lasiocarpine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U147 (CAS 108-31-6) Malaic anhydride	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U148 (CAS 123-33-1) Maleic hydrazide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U149 (CAS 109-77-3) Malononitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U150 (CAS 148-82-3) Melphalan	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U151*** (CAS 7439-97-6) Mercury: (High Mercury Subcategory - greater than or equal to 260 mg/kg total Mercury)	NA	RMERC
U153 (CAS 74-93-1) Methane thiol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U154 (CAS 67-56-1) Methanol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U156 (CAS 79-22-1) Methyl chlorocarbonate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U160 (CAS 1338-23-4) Methyl ethyl ketone peroxide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U163 (CAS 70-25-7) N-Methyl N'-nitro N-Nitrosoguanidine	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U164 (CAS 56-04-2) Methylthiouracil	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)

### Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U166 (CAS 130-15-4) 1,4-Naphthoquinone	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U167 (CAS 134-32-7) 1-Naphthylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U168** (CAS 91-59-8) 2-Naphthylamine	NA	INCIN
U171 (CAS 79-46-9) 2-Nitropropane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U173 (CAS 1116-54-7) N-Nitroso-di-n-ethanolamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U176 (CAS 759-73-9) N-Nitroso-N-ethylurea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U177 (CAS 684-93-5) N-Nitroso-N-methylurea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U178 (CAS 615-53-2) N-Nitroso-N-methylurethane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U182 (CAS 123-63-7) Peraldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U184 (CAS 76-01-7) Pentachloroethane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U186 (CAS 504-60-9) 1,3-Pentadiene	(WETOX or CHOXD) fb	FSUBS; or INCIN
U189 (CAS 1314-80-3) Phosphorus sulfide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U191 (CAS 109-06-8) 2-Picoline	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U193 (CAS 1120-71-4) 1,3-Propane sultone	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

(continued)



# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U194 (CAS 107-10-8) n-Propylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U197 (CAS 106-51-4) p-Benzoquinone	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U200 (CAS 50-55-5) Reserpine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U201 (CAS 108-46-3) Resorcinol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U202 **** (CAS 81-07-2) Saccharin and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U206 (CAS 18883-66-4) Steptozatocin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U213 (CAS 109-99-9) Tetrahydrofuran	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U214** (CAS 563-68-8) Thallium (1) acetate	NA	RTHRM; or STABL
U215** (CAS 6533-73-9) Thallium (1) carbonate	NA	RTHRM; or STABL
U216** (CAS 7791-12-0) Thallium (1) chloride	NA	RTHRM; or STABL
U217** (CAS 10102-45-1) Thallium (1) nitrate	NA	RTHRM; or STABL
U218 (CAS 62-55-5) Thioacetamide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U219 (CAS 62-56-6) Thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U221 (CAS 25376-45-8) Toluenediamine	CARBN; or INCIN	FSUBS; or INCIN

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U222 (CAS 636-21-5) o-Toluidine hydrochloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U223 (CAS 26471-62-5) Toluene diisocyanate	CARBN; or INCIN	FSUBS; or INCIN
U234 (CAS 99-35-4) sym-Trinitrobenzene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U236 (CAS 72-57-1) Trypan Blue	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U237 (CAS 66-57-1) Uracil mustard	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U238 (CAS 51-79-6) Ethyl carbamate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U240 **** (CAS 94-75-7) 2,4-Dichlorophenoxyacetic (salts and esters)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U244 (CAS 137-26-8) Thiram	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U246 (CAS 506-68-3) Cyanogen bromide	CHOXD; WETOX; or INCIN	CHOXD; WETOX; or INCIN
U248 (CAS 81-81-2) Warfarin (.3% or less)	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U249 (CAS 1314-84-7) Zinc Phoshide (<10%)	CHOXD; CHRED; or INCIN	CHOXD; CHRED or INCIN
U328 (CAS 95-53-4) o-toluidine	INCIN; or CHOXD fb (BIODG or CARBN); or BIODG fb CARBN	INCIN; or Thermal Destruction
U353 (CAS 106-49-0) p-toluidine	INCIN; or CHOXD fb (BIODG or CARBN); or BIODG fb CARBN	INCIN; or Thermal Destruction

(continued)

# Appendix 4-9 (continued)

WASTE CODE	TECHNOLOGY CODE	
	WASTEWATERS	NON WASTEWATERS
U359 (CAS 110-80-5) 2-ethoxy-ethanol	INCIN; or CHOXD fb (BIODG or CARBN); or BIODG fb CARBN	INCIN; or FSUBS

\*See also Table CCWE in 268.41 (see accession number 8807).

\*\*See also Table CCW in 268.43 (see accession number 8808).

\*\*\*See also Tables CCWE in 268.41 (see accession number 8807) and CCW in 268.43 (see accession number 8808).

\*\*\*\*CAS Number given for parent compound only.

(continued)

**Appendix 4-9 (continued)**

**Chart 3: Technology-based Standards for Specific Radioactive Hazardous Mixed Waste**

<b>WASTE CODE with WASTE DESCRIPTION and/or TREATMENT CATEGORY</b>	<b>WASTEWATER S</b>	<b>NON WASTEWATER S</b>
D002, D004, D005, D006, and D007 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
D008 (CAS 7439-92-1) Radioactive lead solids subcategory*	NA	MACRO
D008 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
D009 (CAS 7439-97-6) Elemental mercury contaminated with radioactive materials	NA	AMLGM
D009 (CAS 7439-97-6) Hydraulic oil contaminated with mercury; radioactive materials subcategory	NA	IMERC
D009, D010, D011 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
U151 (CAS 7439-97-6) Mercury: Elemental mercury contaminated with radioactive materials	NA	AMLGM
<p>* These lead solids include, but are not limited to, all forms of lead shielding, and other elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organolead materials that can be incinerated and stabilized as ash.</p>		

# Appendix 4-10

## Constituent Concentrations in Wastes (CCW) 40 CFR 268.43(a)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
D003 (CAS 57-12-5) (reactive cyanides category-- based on 261.23(a)(5))		
Cyanides (Total)	Reserved	590 (3)
Cyanides (Amenable)	0.86	30
D004* (CAS 7440-38-2)		
Arsenic	5.0	NA
D005* (CAS 7440-39-2)		
Barium	100	NA
D006* (CAS 7440-43-9)		
Cadmium	1.0	NA
D007* (CAS 7440-47-32)		
Chromium (Total)	5.0	NA
D008* (CAS 7439-92-1)		
Lead	5.0	NA
D009* (CAS 7439-97-6)		
Mercury	0.20	NA
D010* (CAS 7782-49-2)		
Selenium	1.0	NA
D011* (CAS 7440-22-4)		
Silver	5.0	NA
D012** (CAS 720-20-8)		
Endrin	NA	0.13 (1)
D013** (CAS 58-89-9)		
Lindane	NA	0.066 (1)
D014** (CAS 72-43-5)		
Methoxychlor	NA	0.18 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
D015** (CAS 8001-35-1) Toxaphene	NA	1.3 (1)
D016** (CAS 94-75-7) 2,4-D	NA	10.0 (1)
D017** (CAS 93-76-5) 2,4,5-TP Silvex	NA	7.9 (1)
F001-F005 spent solvents*** 1,1,2-Trichloroethane (CAS 71-55-6) Benzene (CAS 71-43-2)	0.030 0.070	7.6 (1) 3.7 (1)
F001-F005 spent solvents (Pharmaceutical industry wastewater subcategory)		
Methylene chloride (CAS 75-09-2)	0.44	NA
F006*		
Cyanides (Total) (CAS 57-12-5)	1.2	590
Cyanides (Amenable) (CAS 57-12-5)	0.86	30
Cadmium (CAS 7440-43-9)	1.6	NA
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.040	NA
Nickel (CAS 7440-02-0)	0.44	NA
F007*		
Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
F008*		
Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7439-92-1)	0.44	NA
F009*		
Cyanides (total) (CAS 57-12-5)	1.9	590

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
<b>F010</b>		
Cyanides (total) (CAS 57-12-5)	1.9	1.5
Cyanides (amenable) (CAS 57-12-5)	0.1	NA
<b>F011*</b>		
Cyanides (total) (CAS 57-12-5)	1.9	110
Cyanides (amenable) (CAS 57-12-5)	0.1	9.1
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
<b>F012*</b>		
Cyanides (total) (CAS 57-12-5)	1.9	110
Cyanides (amenable) (CAS 57-12-5)	0.1	9.1
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
<b>F019*</b>		
Cyanides (total) (CAS 57-12-5)	1.2	590 (3)
Cyanides (amenable) (CAS 57-12-5)	0.86	30 (3)
Chromium (total) (CAS 7440-47-32)	0.32	NA
<b>F024**</b>		
Note: F024 organic standards must be treated via incineration (INCIN)		
2-Chloro-1,3-butadiene (CAS 126-99-6)	0.28 (1)	0.28 (1)
3-Chloropropene (CAS 107-05- )	0.28 (1)	0.28 (1)
1,1-Dichloroethane (CAS 75-34-3)	0.014 (1)	0.014 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.014 (1)	0.014 (1)
1,2-Dichloropropane (CAS 78-87-5)	0.014 (1)	0.014 (1)
cis-1,3-Dichloropropene (CAS 10061-01-5)	0.014 (1)	0.014 (1)
trans-1,3-Dichloropropene (CAS 10061-02-6)	0.014 (1)	0.014 (1)
(1)		
Bis(2-ethylhexyl)phthalate (CAS 117-81-7) . 0.036 (1)	1.8 (1)	
Hexachloroethane (CAS 67-72-1)	0.036 (1)	1.8 (1)
Chromium (total) (CAS 7440-47-32)	0.35	NA
Nickel (CAS 7440-02-0)	0.47	NA

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
F025 (light ends subcategory)		
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	6.2 (1)
1,1-Dichloroethylene (CAS 75-35-4)	0.025 (2)	6.2 (1)
Methylene chloride (CAS 75-9-2)	0.089 (2)	31 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	6.2 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
F025 (spent filters/aids and desiccants subcategory)		
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Methylene chloride (CAS 75-9-2)	0.089 (2)	31 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	6.2 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	37 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)	28 (1)
Hexachloroethane (CAS 67-72-1)	0.055 (2)	30 (1)
F039** (and D001 and D002 wastes prohibited by 268.37)		
Acetone (CAS 67-64-1)	0.28 (2)	160 (1)
Acenaphthylene (CAS 208-96-8)	0.059 (2)	3.4 (1)
Acenaphthene (CAS 83-32-9)	0.059 (2)	4.0 (1)
Acetonitrile (CAS 75-05-8)	0.17 (2)	NA
Acetophenone (CAS 96-86-2)	0.010 (2)	9.7 (1)
2-Acetylaminofluorene (CAS 53-96-3)	0.059 (2)	140 (1)
Acrolein		
Acrylonitrile (CAS 107-02-8)	0.29 (2)	NA
Aldrin (CAS 107-13-1)	0.24 (2)	84 (1)
(CAS 309-00-2)	0.021 (2)	0.066 (1)
4-Aminobiphenyl (CAS 92-67-1)	0.13 (2)	NA
Aniline (CAS 62-53-3)	0.81 (2)	14 (1)
Anthracene (CAS 120-12-7)	0.059 (2)	4.0 (1)
Aramite (CAS 140-57-8)	0.36 (2)	NA
Aroclor 1016 (CAS 12674-11-2)	0.013 (2)	0.92 (1)
Aroclor 1221 (CAS 11104-28-2)	0.014 (2)	0.92 (1)
Aroclor 1232 (CAS 11141-16-5)	0.013 (2)	0.92 (1)
Aroclor 1242 (CAS 53469-21-9)	0.0172	0.92 (1)
Aroclor 1248 (CAS 12672-29-6)	0.013 (2)	0.92 (1)
Aroclor 1254 (CAS 11097-69-1)	0.014 (2)	1.8 (1)

(continued)



# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Aroclor 1260 (CAS 11096-82-5)	0.014 (2)	1.8 (1)
alpha-BHC (CAS 319-84-6)	0.00014 (2)	0.066 (1)
beta-BHC (CAS 319-85-7)	0.00014 (2)	0.066 (1)
delta-BHC (CAS 319-86-8)	0.023 (2)	0.066 (1)
gamma-BHC (CAS 58-89-9)	0.0017 (2)	0.066 (1)
Benzene (CAS 71-34-2)	0.14 (2)	36 (1)
Benzo(a)anthracene (CAS 56-55-3)	0.059 (2)	8.2 (1)
Benzo(b)fluoranthene (CAS 205-99-2)	0.055 (2)	3.4 (1)
Benzo(k)fluoranthene (CAS 207-08-9)	0.059 (2)	3.4 (1)
Benzo(g,h,i)perylene (CAS 191-24-2)	0.0055 (2)	1.5 (1)
Benzo(a)pyrene (CAS 5-32-8)	0.061 (2)	8.2 (1)
Bromodichloromethane (CAS 75-27-4)	0.35 (2)	15 (1)
Bromoform (CAS 72-25-2)	0.63 (2)	15 (1)
(Tribromomethane)		
Bromomethane (CAS 74-83-9)	0.11 (2)	15 (1)
(methyl bromide)		
4-Bromophenyl phenyl ether (CAS 101-55-3)	0.055 (2)	15 (1)
n-Butyl alcohol (CAS 71-36-3)	5.6 (2)	2.6 (1)
Butyl benzyl phthalate (CAS 85-68-7)	0.017 (2)	7.9 (1)
2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7). 0.066 (2)	2.5 (1)	
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	5.6 (1)
Carbon disulfide (CAS 75-15-0)	0.014 (2)	NA
Chlordane (CAS 57-74-9)	0.0033 (2)	0.13 (1)
p-Chloroaniline (CAS 106-47-8)	0.46 (2)	16 (1)
Chlorobenzene (CAS 108-90-7)	0.057 (2)	5.7 (1)
Chlorobenzilate (CAS 510-15-6)	0.10 (2)	NA
2-Chloro-1,3-butadiene (CAS 126-99-8)	0.057 (2)	NA
Chlorodibromomethane (CAS 124-48-1)	0.057 (2)	15 (1)
Chloroethane (CAS 75-00-3)	0.27 (2)	6.0 (1)
bis(2-Chloroethoxy) methane (CAS 111-91-1)	0.036 (2)	7.2 (1)
bis(2-Chloroethyl) ether (CAS 111-44-4)	0.033 (2)	7.2 (1)
Chloroform (CAS 67-66-3)	0.046 (2)	5.6 (1)
bis(2-Chloroisopropyl) ether(CAS 39638-32-9) 0.055 (2)	7.2 (1)	
p-Chloro-m-cresol (CAS 59-50-7)	0.018 (2)	14 (1)
Chloromethane (Methyl chloride)(CAS 74-87-3).0.19 (2)	33 (1)	
2-Chloronaphthalene (CAS 91-58-7)	0.055 (2)	5.6 (1)
2-Chlorophenol (CAS 95-57-8)	0.044 (2)	5.7 (1)
3-Chloropropylene (CAS 107-05-1)	0.036 (2)	28 (1)
Chrysene (CAS 218-01-9)	0.059 (2)	8.2 (1)
o-Cresol (CAS 95-48-7)	0.11 (2)	5.6 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Cresol (m- and p-isomers)	0.77 (2)	3.2 (1)
Cyclohexanone (CAS 108-94-1)	0.36 (2)	NA
1,2-Dibromo-3-chloropropane (CAS 96-12-8)	0.11 (2)	15 (1)
1,2-Dibromoethane (CAS 106-93-4)	0.028 (2)	15 (1)
(Ethylene dibromide)		
Dibromomethane (CAS 74-95-3)	0.11 (2)	15 (1)
2,4-Dichlorophenoxyacetic acid (2,4-D) (CAS 94-75-7)	0.72 (2)	10 (1)
o,p'-DDD (CAS 53-19-0)	0.023 (2)	0.087 (1)
p,p'-DDD (CAS 72-54-8)	0.023 (2)	0.087 (1)
o,p'-DDE (CAS 3424-82-6)	0.031 (2)	0.087 (1)
p,p'-DDE (CAS 72-55-9)	0.031 (2)	0.087 (1)
o,p'-DDT (CAS 780-02-6)	0.0039 (2)	0.087 (1)
p,p'-DDT (CAS 50-29-3)	0.0039 (2)	0.087 (1)
Dibenzo(a,h)anthracene (CAS 53-70-3)	0.055 (2)	8.2 (1)
Dibenzo(a,e)pyrene (CAS 192-65-4)	0.061 (2)	NA
m-Dichlorobenzene (CAS 541-73-1)	0.036 (2)	6.2 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	6.2 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	6.2 (1)
Dichlorodifluoromethane (CAS 75-71-8)	0.23 (2)	7.2 (1)
1,1-Dichloroethane (CAS 75-34-3)	0.059 (2)	7.2 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	7.2 (1)
1,1-Dichloroethylene (CAS 75-35-4)	0.025 (2)	33 (1)
trans-1,2-Dichloroethene	0.054 (2)	33 (1)
2,4-Dichlorophenol (CAS 120-83-2)	0.044 (2)	14 (1)
2,6-Dichlorophenol (CAS 87-65-0)	0.044 (2)	14 (1)
1,2-Dichloropropane	0.85 (2)	18 (1)
cis-1,3-Dichloropropene (CAS 10061-01-5)	0.036 (2)	18 (1)
trans-1,3-Dichloropropene (CAS 10061-02-6)	0.036 (2)	18 (1)
Dieldrin (CAS 60-57-1)	0.017 (2)	0.13 (1)
Diethyl phthalate (CAS 84-66-2)	0.20 (2)	28 (1)
2,4-Dimethyl phenol (CAS 105-67-9)	0.036 (2)	14 (1)
Dimethyl phthalate (CAS 131-11-3)	0.047 (2)	28 (1)
Di-n-butyl phthalate (CAS 84-74-2)	0.057 (2)	28 (1)
1,4-Dinitrobenzene (CAS 100-25-4)	0.32 (2)	2.3 (1)
4,6-Dinitro-o-cresol (CAS 534-52-1)	0.28 (2)	160 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.12 (2)	160 (1)
2,4-Dinitrotoluene (CAS 121-14-2)	0.32 (2)	140 (1)
2,6-Dinitrotoluene (CAS 606-20-2)	0.55 (2)	28 (1)
Di-n-octyl phthalate (CAS 117-84-0)	0.017 (2)	28 (1)
Di-n-propylnitrosamine (CAS 621-64-7)	0.40 (2)	14 (1)
Diphenylamine (CAS 122-39-4)	0.52 (2)	NA

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
1,2-Diphenyl hydrazine (CAS 122-66-7)	0.087 (2)	NA
Diphenylnitrosamine (CAS 621-64-7)	0.40 (2)	NA
1,4-Dioxane (CAS 123-91-1)	0.12 (2)	170 (1)
Disulfoton (CAS 298-04-4)	0.017 (2)	6.2 (1)
Endosulfan I (CAS 939-98-8)	0.023 (2)	0.066 (1)
Endosulfan II (CAS 33213-6-5)	0.029 (2)	0.13 (1)
Endosulfan sulfate (CAS 1031-07-8)	0.029 (2)	0.13 (1)
Endrin (CAS 72-20-8)	0.0028 (2)	0.13 (1)
Endrin aldehyde (CAS 7421-93-4)	0.025 (2)	0.13 (1)
Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
Ethyl cyanide (CAS 107-12-0)	0.24 (2)	360 (1)
Ethyl benzene (CAS 100-41-4)	0.057 (2)	6.0 (1)
Ethyl ether (CAS 60-29-7)	0.12 (2)	160 (1)
bis(2-Ethylhexyl) phthalate (CAS 117-81-7)	0.28 (2)	28 (1)
Ethyl methacrylate (CAS 97-63-2)	0.14 (2)	160 (1)
Ethylene oxide (CAS 75-21-8)	0.12 (2)	NA
Famphur (CAS 52-85-7)	0.017 (2)	15 (1)
Fluoranthene (CAS 206-44-0)	0.068 (2)	8.2 (1)
Fluorene (CAS 86-73-7)	0.059 (2)	4.0 (1)
Fluorotrichloromethane (CAS 75-69-4)	0.020 (2)	33 (1)
Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	37 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)	28 (1)
Hexachlorocyclopentadiene (CAS 77-47-4)	0.057 (2)	3.6 (1)
Hexachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Hexachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
Hexchloroethane (CAS 67-72-1)	0.055 (2)	28 (1)
Hexachloropropene (CAS 1888-71-7)	0.035 (2)	28 (1)
Indeno(1,2,3,-c,d)pyrene (CAS 193-39-5). 0.0055 (2)	8.2 (1)	
Iodomethane (CAS 74-88-4)	0.019 (2)	65 (1)
Isobutanol (CAS 78-83-1)	5.6 (2)	170 (1)
Isodrin (CAS 465-73-6)	0.021 (2)	0.066 (1)
Isosafrole (CAS 120-58-1)	0.081 (2)	2.6 (1)
Kepone (CAS 143-50-8)	0.0011 (2)	0.13 (1)
Methacrylonitrile (CAS 126-98-7)	0.24 (2)	84 (1)
Methanol (CAS 67-56-1)	5.6 (2)	NA
Methapyrilene (CAS 91-80-5)	0.081 (2)	1.5 (1)
Methoxychlor (CAS 72-43-5)	0.25 (2)	0.18 (1)
3-Methylcholanthrene (CAS 56-49-5)	0.0055 (2)	15 (1)
4,4-Methylene-bis-(2-chloroaniline) (CAS 101-14-4)	0.50 (2)	35 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
Methyl ethyl ketone (CAS 78-93-3)	0.28 (2)	36 (1)
Methyl isobutyl ketone (CAS 108-10-1)	0.14 (2)	33 (1)
Methyl methacrylate (CAS 80-62-6)	0.14 (2)	160 (1)
Methyl methansulfonate (CAS 66-27-3)	0.018 (2)	NA
Methyl parathion (CAS 298-00-0)	0.014 (2)	4.6 (1)
Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
2-Naphthylamine (CAS 91-59-8)	0.52 (2)	NA
p-Nitroaniline (CAS 100-01-6)	0.028 (2)	28 (1)
Nitrobenzene (CAS 96-95-3)	0.068 (2)	14 (1)
5-Nitro-o-toluidine (CAS 99-55-8)	0.32 (2)	28 (1)
4-Nitrophenol (CAS 100-02-7)	0.12 (2)	29 (1)
N-Nitrosodiethylamine (CAS 55-18-5)	0.40 (2)	28 (1)
N-Nitrosodimethylamine (CAS 62-75-9)	0.40 (2)	NA
N-Nitroso-di-n-butylamine (CAS 924-16-3)	0.40 (2)	2.3 (1)
N-Nitrosomethylethylamine (CAS 10595-95-6)	17 (1)	
N-Nitrosomorpholine (CAS 59-89-2)	0.40 (2)	2.3 (1)
N-Nitrosopiperidine (CAS 100-75-4)	0.013 (2)	35 (1)
N-Nitrosopyrrolidine (CAS 930-55-2)	0.013 (2)	35 (1)
Parathion (CAS 56-38-2)	0.014 (2)	4.6 (1)
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	37 (1)
Pentachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
Pentachloronitrobenzene (CAS 82-68-8)	0.055 (2)	4.8 (1)
Pentachlorophenol (CAS 87-86-5)	0.089 (2)	7.4 (1)
Phenacetin (CAS 62-44-2)	0.081 (2)	16 (1)
Phenanthrene (CAS 85-01-8)	0.059 (2)	3.1 (1)
Phenol (CAS 108-95-2)	0.039 (2)	6.2 (1)
Phorate (CAS 298-02-2)	0.021 (2)	4.6 (1)
Phthalic anhydride (CAS 85-44-9)	0.069 (2)	NA
Pronamide (CAS 23950-58-5)	0.093 (2)	1.5 (1)
Pyrene (CAS 129-00-0)	0.067 (2)	8.2 (1)
Pyridine (CAS 110-86-1)	0.014 (2)	16 (1)
Safrole (CAS 94-59-7)	0.081 (2)	22 (1)
Silvex (2,4,5-TP) (CAS 93-72-1)	0.72 (2)	7.9 (1)
2,4,5-T (CAS 93-76-5)	0.72 (2)	7.9 (1)
1,2,4,5,-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	19 (1)
Tetrachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Tetrachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057 (2)	42 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
1,1,2,2-Tetrachloroethane (CAS 70-34-6). 0.057 (2)	42 (1)	
Tetrachloroethene (CAS 127-18-4)	0.056 (2)	5.6 (1)
2,3,4,6-Tetrachlorophenol (CAS 58-90-2). 0.030 (2)	37 (1)	
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
Toxaphene (CAS 8001-35-1)	0.0095 (2)	1.3 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055 (2)	19 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.18 (2)	37 (1)
2,4,6-Trichlorophenol (CAS 88-06-2)	0.035 (2)37 (1)	
1,2,3-Trichloropropane (CAS 96-18-4)	0.85 (2)	28 (1)
1,1,2-Trichloro-1,2,2-trifluoro-ethane (CAS 76-13-1)	0.057 (2)	28 (1)
Tris(2,3-dibromopropyl (CAS 126-72-7)	0.11 (2)	NA
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
Xylene(s)	0.32 (2)	28 (1)
Cyanides (total) (CAS 57-12-5)	1.2 (2)	1.8 (1)
Fluoride (CAS 16964-48-8)	35 (2)	NA
Sulfide (CAS 8496-25-8)	14 (2)	NA
Antimony (CAS 7440-36-0)	1.9 (2)	NA
Arsenic (CAS 7440-38-2)	1.4 (2)	NA
Barium (CAS 7440-39-3)	1.2 (2)	NA
Beryllium (CAS 7440-41-7)	0.82 (2)	NA
Cadmium (CAS 7440-43-9)	0.20 (2)	NA
Chromium (total) (CAS 7440-47-32)	0.37	NA
Copper (CAS 7440-50-8)	1.3 (2)	NA
Lead (CAS 7439-92-1)	0.28 (2)	NA
Mercury (CAS 7439-97-6)	0.15 (2)	NA
Nickel (CAS 7440-02-0)	0.55 (2)	NA
Selenium (CAS 7782-49-2)	0.82 (2)	NA
Silver (CAS 7440-22-4)	0.29 (2)	NA
Thallium (CAS 7440-28-0)	1.4 (2)	NA
Vanadium (CAS 7440-62-2)	0.042 (2)	NA
Zinc (CAS 7440-66-6)	1.0 (2)	NA
K001*		
Naphthalene (CAS 91-20-3)	0.031 (1)	1.5 (1)
Pentachlorophenol (CAS 87-86-5)	0.18 (1)	7.4 (1)
Penanthrene (CAS 85-01-8)	0.031 (1)	1.5 (1)
Pyrene (CAS 129-99-0)	0.028 (1)	1.5 (1)
Toluene (CAS 108-88-3)	0.028 (1)	28 (1)

(continued)

**Appendix 4-10 (continued)**

<b>Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers</b>	<b>Concentrations</b>	
	<b>Wastewaters (mg/kg) Notes</b>	<b>Nonwastewaters (mg/kg) Notes</b>
Xylenes (total)	0.032 (1)	33 (1)
Lead (CAS 7439-92-1)	0.037	NA
K002*, K003*, and K004*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
K005*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
Cyanides(total) (CAS 57-12-5)	0.74 (2)	Reserved
K006*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
K007*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
Cyanides (total) (CAS 57-12-5)	0.74 (2)	
K008*		
Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
K009		
Chloroform (CAS 67-66-3)	0.1	6.0 (1)
K010		
Chloroform (CAS 67-66-3)	0.1	6.0 (1)
K011, K013, and K014		
Acetonitrile (CAS 75-05-8)	38	1.8 (1)
Acrylonitrile (CAS 107-13-1)	0.06	1.4 (1)
Acrylamide (CAS 79-06-1)	19	23 (1)
Benzene (CAS 71-34-2)	0.02	0.03 (1)
Cyanide(total) (CAS 57-12-5)	21	57
K015*		
Anthracene (CAS 120-12-7)	1.0	3.4 (1)
Benzal chloride (CAS 98-87-3)	0.28	6.2 (1)
Sum of Benzo(b) fluoranthene (CAS 205-99-2) and		

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Benzo(k)fluoranthene (CAS 207-08-9)	0.029	3.4 (1)
Phenanthrene (CAS 85-01-8)	0.27	3.4 (1)
Toluene (CAS 108-88-3)	0.15	6.0 (1)
Chromium (total) (CAS 7440-47-32)	0.32	NA
Nickel (CAS 7440-02-0)	0.44	NA
K016		
Hexachlorobenzene (CAS 118-74-1)	0.033 (1)	28 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachlorocyclopentadiene (CAS 77-47-4). 0.007 (1)	5.6 (1)	
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)
K017		
1,2-Dichloropropane (CAS 78-87-5)	0.85 (1,2)	18 (1)
1,2,3-Trichloropropane (CAS 96-16-4)	0.85 (1,2)	28 (1)
Bis(2-chloroethyl)ether (CAS 111-44-4)	0.033 (1,2)	7.2 (1)
K018		
Chloroethane (CAS 75-00-3)	0.007 (1)	6.0 (1)
Chloromethane (CAS 74-87-3)	0.007 (1)	NA
1,1-Dichloroethane (CAS 75-34-3)	0.007 (1)	6.0 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
Hexachlorobenzene (CAS 118-74-1)	0.033 (1)	28 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	NA	28 (1)
Pentachloroethane (CAS 76-01-7)	0.007 (1)	5.6 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
K019		
Bis(2-chloroethyl)ether (CAS 111-44-4). 0.007 (1)	5.6 (1)	
Chlorobenzene (CAS 108-90-7)	0.006 (1)	6.0 (1)
Chloroform (CAS 67-66-3)	0.007 (1)	6.0 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.008 (1)	NA
1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
Fluorene (CAS 86-73-7)	0.007 (1)	NA
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Naphthalene (CAS 91-20-3)	0.007 (1)	5.6 (1)
Phenanthrene (CAS 85-01-8)	0.007 (1)	5.6 (1)
1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.017 (1)	NA
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.023 (1)	19 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
K020		
1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6) 0.007 (1)	5.6 (1)	
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)
K021*		
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
Antimony (CAS 7440-36-0)	0.60 (2)	NA (1)
K022*		
Toluene (CAS 108-88-3)	0.080 (2)	0.034 (1)
Acetophenone (CAS 96-86-2)	0.010	19 (1)
Diphenylamine (CAS 22-39-4)	0.52 (2)	NA
Diphenylnitrosamine (CAS 86-30-60)	0.40 (2)	NA
Sum of Diphenylamine and Diphenylnitrosamine	NA	13 (1)
Phenol (CAS 108-95-2)	0.039	12 (1)
Chromium (total) (CAS 7440-47-32)	0.35	NA
Nickel (CAS 7440-02-0)	0.47	NA
K023 and K024		
Phthalic anhydride (measured as Phthalic acid) (CAS 85-44-9)	0.54 (1)	28 (1)
K028*		
1,1-Dichloroethane (CAS 75-34-3)	0.007 (1)	6.0 (1)
trans-1,2-Dichloroethane	0.033 (1)	6.0 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Pentachloroethane (CAS 76-01-7)	0.033 (1)	5.6 (1)
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.007 (1)	5.6 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6)	0.007 (1)	5.6 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.007 (1)	6.0 (1)
Tetrachloroethylene (CAS 127-18-4)	0.007 (1)	6.0 (1)
Cadmium (CAS 7440-43-9)	6.4	NA
Chromium (total) (CAS 7440-47-32)	0.35	NA

(continued)



# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Lead (CAS 7439-92-1)	0.037	NA
Nickel (CAS 7440-02-0)	0.47	NA
<b>K029</b>		
Chloroform (CAS 67-66-3)	0.046	6.0 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21	6.0 (1)
1,1-Dichloroethylene (CAS 75-35-4)	0.025	6.0 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054	6.0 (1)
Vinyl chloride (CAS 75-01-4)	0.27	6.0 (1)
<b>K030</b>		
o-Dichlorobenzene (CAS 95-50-1)	0.008 (1)	NA
p-Dichlorobenzene (CAS 106-46-7)	0.008 (1)	NA
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Hexachloropropene (CAS 1888-71-7)	NA	19 (1)
Pentachlorobenzene (CAS 608-93-5)	NA	28 (1)
Pentachloroethane (CAS 76-01-7)	0.007 (1)	5.6 (1)
1,2,4,5-Tetrachlorobenzene (CAS 76-01-7) 0.017	14 (1)	
Tetrachloroethane (CAS 127-18-4)	0.007 (1)	6.0 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.023 (1)	19 (1)
<b>K031*</b>		
Arsenic (CAS 7440-38-2)	0.79	NA
<b>K032</b>		
Hexachloropentadiene (CAS 77-47-4)	0.057 (2)	2.4 (1)
Chlordane (CAS 57-74-9)	0.0033 (2)	0.26 (1)
Heptachlor (CAS 76-44-8)	0.012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
<b>K033 and K034</b>		
Hexachlorocyclopentadiene (CAS 77-47-4). 0.057 (2)	2.4 (1)	
<b>K035</b>		
Acenaphthene (CAS 83-32-9)	NA	3.4 (1)
Anthracene (CAS 120-12-7)	NA	3.4 (1)
Benz(a)anthracene (CAS 56-55-3)	0.059 (2)	3.4 (1)
Benzo(a)pyrene (CAS 5-32-8)	NA	3.4 (1)
Chrysene (CAS 218-01-9)	0.059 (2)	3.4 (1)
Dibenz(a,h)anthracene (CAS 53-70-3)	NA	3.4 (1)
Fluoranthene (CAS 206-44-0)	0.068 (2)	3.4 (1)
Fluorene (CAS 86-73-7)	NA	3.4 (1)
Indeno(1,2,3-cd)pyrene (CAS 193-39-5). NA	3.4 (1)	

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Cresols (m-and p-isomers)	0.77 (2)	NA
Naphthalene (CAS 91-20-3)	0.059 (2)	3.4 (1)
o-cresol (CAS 95-48-7)	0.11 (2)	NA
Phenanthrene (CAS 85-01-8)	0.059 (2)	3.4 (1)
Phenol (CAS 108-95-2)	0.039	NA
Pyrene (CAS 129-00-0)	0.067 (2)	8-2 (1)
<b>K036</b>		
Disulfoton (CAS 298-04-4)	0.025 (2)	0.1 (1)
<b>K037</b>		
Disulfoton (CAS 298-04-4)	0.025 (2)	0.1 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
<b>K038</b>		
Phorate (CAS 298-02-2)	0.025 (2)	0.1 (1)
<b>K040</b>		
Phorate (CAS 298-02-2)	0.025 (2)	0.1 (1)
<b>K041</b>		
Toxaphene (CAS 8001-35-1)	0.0095 (2)	2.6 (1)
<b>K042</b>		
1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	4.4 (1)
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	4.4 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1). 0.055 (2)	4.4 (1)	
<b>K043</b>		
2,4-Dichlorophenol (CAS 120-83-2)	0.049 (1)	0.38 (1)
2,6-Dichlorophenol (CAS 87-65-0)	0.013 (1)	0.34 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.016 (1)	8.2 (1)
2,4,6-Trichlorophenol (CAS 88-06-2)	0.039 (1)	7.6 (1)
Tetrachlorophenols (total)	0.018 (1)	0.68 (1)
Pentachlorophenol (CAS 87-86-5)	0.22 (1)	1.9 (1)
Tetrachloroethene (CAS 79-01-6)	0.006 (1)	1.7 (1)
Hexachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Hexachlorodibenzo-furans	0.001 (1)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Pentachlorodibenzo-furans	0.001 (1)	0.001 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Tetrachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Tetrachlorodibenzo-furans	0.001 (1)	0.001 (1)
K046*		
Lead (CAS 7439-92-1)	0.037	NA
K048*		
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12 (1)
Bis(2-ethylhexy)phthalate (CAS 117-81-7)	0.043 (1)	7.3 (1)
Chrysene (CAS 218-01-9)	0.043 (1)	15 (1)
Di-n-butyl phthalate (CAS 84-74-2)	0.06 (1)	3.6 (1)
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Fluorene (CAS 86-73-7)	0.005 (1)	NA
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Pyrene (CAS 129-00-0)	0.045 (1)	36 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylene(s)	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K049*		
Anthracene (CAS 120-12-7)	0.039 (1)	28 (1)
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 5-32-8)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.043 (1)	7.3 (1)
Carbon disulfide (CAS 75-15-0)	0.011 (1)	NA
Chrysene (CAS 2218-01-9)	0.043 (1)	15 (1)
2,4-Dimethylphenol (CAS 105-67-9)	0.033 (1)	NA
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Pyrene (CAS 129-00-0)	0.045 (1)	36 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylene(s)	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Lead (CAS 7439-92-1)	0.037 (1)	NA
K050*		
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K051*		
Acenaphthene (CAS 208-96-8)	0.05 (1)	NA
Anthracene (CAS 120-12-7)	0.039 (1)	28 (1)
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)anthracene (CAS 50-32-8)	0.043 (1)	20 (1)
Benzo(a)pyrene (CAS 117-81-7)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate (CAS 75-15-0)	0.043 (1)	7.3 (1)
Chrysene (CAS 2218-01-09)		
Di-n-butyl phthalate (CAS 105-67-9)	0.06 (1)	3.6 (1)
Ethylbenzene (CAS 100-41-4)		
Fluorene (CAS 86-73-7)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.05 (1)	
Phenanthrene (CAS 85-01-8)	0.033 (1)	42 (1)
Phenol (CAS 108-95-2)	0.039 (1)	34 (1)
Pyrene (CAS 129-00-0)	0.047 (1)	3.6 (1)
Toluene (CAS 108-88-3)	0.045 (1)	36 (1)
Xylene(s)	0.011 (1)	14 (1)
Cyanides(total) (CAS 57-12-5)	0.011 (1)	22 (1)
Chromium(total) (CAS 7440-47-32)	0.028 (1)	1.8 (1)
Lead (CAS 7439-92-1)	0.2	NA
K052*		
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12 (1)
o-Cresol (CAS 95-48-7)	0.011 (1)	6.2 (1)
p-Cresol (CAS 106-44-5)	0.011 (1)	6.2 (1)
2,4-Dimethylphenol (CAS 105-67-9)	0.033 (1)	NA
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Xylenes	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K060		
Benzene (CAS 71-43-2)	0.17 (1,2)	0.071 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.035 (1,2)	3.6 (1)
Naphthalene (CAS 91-20-3)	0.028 (1,2)	3.4 (1)
Phenol (CAS 108-95-2)	0.042 (1,2)	3.4 (1)
Cyanides(total) (CAS 57-12-5)	1.9	1.2
K061*		
Cadmium (CAS 7440-43-9)	1.61	NA
Chromium(total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.51	NA
Nickel (CAS 7440-02-0)	0.44	NA
K062*		
Chromium(total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
K069***		
Cadmium (CAS 7440-43-9)	1.6	NA
Lead (CAS 7439-92-1)	0.51	NA
K071*		
Mercury (CAS 7439-97-6)	0.030	NA
K073		
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Hexachloroethane (CAS 67-72-1)	0.055 (2)	30 (1)
Tetrachloroethene (CAS 127-18-4)	0.056 (2)	6.2 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	6.2 (1)
K083*		
Benzene (CAS 71-34-2)	0.14 (2)	6.6 (1)
Aniline (CAS 62-53-3)	0.81	14 (1)
Diphenylamine (CAS 22-39-4)	0.52 (2)	NA
Diphenylnitrosamine (CAS 86-30-6)	0.40 (2)	NA

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Sum of diphenylamine and Diphenyl- nitrosamine	NA	14 (1)
Nitrobenzene (CAS 98-95-3)	0.068 (2)	14 (1)
Phenol (CAS 108-95-2)	0.039 (2)	5.6 (1)
Cyclohexanone (CAS 108-94-1)	0.36	NA
Nickel (CAS 7440-02-0)	0.47	NA
K084		
Arsenic (CAS 7440-38-2)	0.79	NA
K085		
Benzene (CAS 71-43-2)	0.14 (2)	4.4 (1)
Chlorobenzene (CAS 108-90-7)	0.057 (2)	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	4.4 (1)
m-Dichlorobenzene (CAS 541-73-1)	0.036 (2)	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	4.4 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055 (2)	4.4 (1)
1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	4.4 (1)
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	4.4 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	4.4 (1)
Aroclor 1016 (CAS 12674-11-2)	0.013 (2)	0.92 (1)
Aroclor 1221 (CAS 11104-28-2)	0.014 (2)	0.92 (1)
Aroclor 1232 (CAS 11141-16-5)	0.013 (2)	0.92 (1)
Aroclor 1242 (CAS 53469-21-9)	0.017 (2)	0.92 (1)
Aroclor 1248 (CAS 12672-29-6)	0.013 (2)	0.92 (1)
Aroclor 1254 (CAS 11097-69-1)	0.014 (2)	1.8 (1)
Aroclor 1260 (CAS 11096-82-5)	0.014 (2)	1.8 (1)
K086*		
Acetone (CAS 67-64-1)	0.28	160 (1)
Acetophenone (CAS 96-86-2)	0.010	9.7 (1)
Bis(2-ethylhexyl)phthalate	0.28 (2)	28 (1)
n-Butyl alcohol (CAS 71-36-3)	5.6	2.6 (1)
Butyl benzyl phthalate (CAS 85-68-7)	0.017 (2)	7.9 (1)
Cyclohexanone (CAS 108-94-1)	0.36	NA
1,2-Dichlorobenzene (CAS 95-50-1)	0.088	6.2 (1)
Diethyl phthalate (CAS 84-66-2)	0.20 (2)	28 (1)
Dimethylphthalate (CAS 131-11-3)	0.047 (2)	28 (1)
Di-n-butylphthalate (CAS 84-74-2)	0.057 (2)	28 (1)
Di-n-octylphthalate (CAS 117-84-0)	0.017 (20)	28 (1)
Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Ethylbenzene (CAS 100-41-4)	0.057 (2)	6.0
Methanol (CAS 67-56-1)	5.6 (2)	NA
Methyl isobutyl ketone (CAS 108-10-1)	0.14	33 (1)
Methyl ethyl ketone (CAS 78-93-3)	0.28	36 (1)
Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
Nitrobenzene (CAS 98-95-3)	0.068 (2)	14 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Xylenes (Total)	0.32 (2)	28 (1)
Cyanides (Total) (CAS 57-12-5)	1.91.5	
Chromium (Total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.037	NA
K087*		
Acenaphthylene (CAS 208-96-8)	0.028 (1)	3.4 (1)
Benzene (CAS 71-43-2)	0.014 (1)	0.071 (1)
Chrysene (CAS 218-01-9)	0.028 (1)	3.4 (1)
Fluoranthene (CAS 206-44-0)	0.028 (1)	3.4 (1)
Indeno(1,2,3-cd)pyrene (CAS 193-39-5)	0.028 (1)	3.4 (1)
Naphthalene (CAS 91-20-3)	0.028 (1)	3.4 (1)
Phenanthrene (CAS 85-01-8)	0.028 (10)	3.4 (1)
Toluene (CAS 85-01-8)	0.008 (1)	0.65 (1)
Xylenes	0.014 (1)	0.07 (1)
Lead (CAS 7439-92-1)	0.037	NA
K093 and K094		
Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid)	0.54 (1)	28 (1)
K095		
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	5.6 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6)	0.057	5.6 (1)
Tetrachloroethene (CAS 127-18-4)	0.056	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054	6.0 (1)
Trichloroethylene (CAS 79-01-6)	0.054	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.055	28 (1)
Pentachloroethane (CAS 76-01-7)	0.055	5.6 (1)
K096		
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	5.6 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6)	0.057	5.6 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Tetrachloroethene (CAS 127-18-4)	0.056	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054	6.0 (1)
Trichloroethene (CAS 79-01-6)	0.054	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054	5.6 (1)
1,3-Dichlorobenzene (CAS 541-73-1)	0.036	5.6 (1)
Pentachloroethane (CAS 76-01-7)	0.055	5.6 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055	19 (1)
K097		
Hexachlorocyclopentadiene (CAS 77-47-4)	0.057 (2)	2.4 (1)
Chlordane (CAS 57-74-9)	0.0033 (2)	0.26 (1)
Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
K098		
Toxaphene (CAS 8001-35-1)	0.0095 (2)	2.6 (1)
K099		
2,4-Dichlorophenoxyacetic acid (CAS 94-75-7)	1.0 (1)	1.0 (1)
Hexachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Hexachlorodibenzofurans	0.001 (1)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Pentachlorodibenzofurans	0.001 (1)	0.001 (1)
Tetrachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Tetrachlorodibenzofurans	0.001 (1)	0.001 (1)
K100*		
Cadmium (CAS 7440-43-9)	1.6	NA
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.51	NA
K101		
o-Nitroaniline	0.27 (1)	14 (1)
Arsenic (CAS 7440-38-2)	0.79	NA
Cadmium (CAS 7440-43-9)	0.24	NA
Lead (CAS 7439-92-1)	0.17	NA
Mercury (CAS 7439-97-6)	0.082	NA
K102*		
o-Nitrophenol	0.028 (1)	13 (1)
Arsenic (CAS 7440-38-2)	0.79	NA

(continued)



# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Cadmium (CAS 7440-43-9)	0.24	NA
Lead (CAS 7439-92-1)	0.17	NA
Mercury (CAS 7439-97-6)	0.082	NA
K103		
Aniline (CAS 62-53-3)	4.5	5.6 (1)
Benzene (CAS 71-34-2)	0.15	6.0 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.61	5.6 (1)
Nitrobenzene (CAS 98-95-3)	0.073	5.6 (1)
Phenol (CAS 108-95-2)	1.4	5.6 (1)
K104		
Aniline (CAS 62-53-3)	4.5	5.6 (1)
Benzene (CAS 71-43-2)	0.15	6.0 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.61	5.6 (1)
Nitrobenzene (CAS 98-95-3)	0.073	5.6 (1)
Phenol (CAS 108-95-2)	1.4	5.6 (1)
Cyanides (Total) (CAS 57-12-5)	2.7	1.8 (1)
K105		
Benzene (CAS 71-43-2)	0.14	4.4 (1)
Chlorobenzene (CAS 108-90-7)	0.057	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090	4.4 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.18	4.4 (1)
2,4,6-Trichlorophenol (CAS 88-06-2)	0.035	4.4 (1)
2-Chlorophenol (CAS 95-57-8)	0.044	4.4 (1)
Phenol (CAS 108-95-2)	0.039	4.4 (1)
K106***		
Mercury (CAS 7439-97-6)	0.030	NA
K115*		
Nickel (CAS 7440-02-0)	0.47	NA
P004 (Aldrin)		
Aldrin (CAS 309-00-2)	0.21 (2)	0.066 (1)
P010* (Arsenic acid)		
Arsenic (CAS 7440-38-2)	0.79	NA
P011* (Arsenic pentoxide)		

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Arsenic (CAS 7440-38-2)	0.79	NA
P012* (Arsenic trioxide)		
Arsenic (CAS 7440-38-2)	0.79	NA
P013* (Barium cyanide)		
Cyanides (Total)	1.9	110
Cyanides (Amenable)	0.1	9.1
P020 (Dinoseb)		
2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7)	0.066	2.5 (1)
P021 (Calcium cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
P022** (Carbon disulfide)		
Carbon disulfide (CAS 75-15-0)	0.014	NA
P024 (p-Chloroaniline)		
p-Chloroaniline (CAS 106-47-8)	0.46	16 (1)
P029 (Copper cyanide)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
P030 (Cyanides (soluble salts and complexes)		
Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amendable) (CAS 57-12-5)	0.1	9.1
P036* (Dichlorophenylarsine)		
Arsenic (CAS 7440-38-2)	0.79	NA
P037		
Dieldrin (CAS 60-57-1)	0.017 (2)	0.13 (1)
P038* (Diethylarsine)		
Arsenic (CAS 7440-38-2)	0.79	NA
P039		
Disulfoton (CAS 298-04-4)	0.017	0.1 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
P047 4,6-Dinitro-o-cresol (CAS 534-52-1)	0.28	160 (1)
P048 2,4-Dinitrophenol (CAS 51-28-5)	0.12 (2)	160 (1)
P050 Endosulfan I (CAS 939-98-8)	0.023 (2)	0.066 (1)
Endosulfan II (CAS 33213-6-5)	0.029 (2)	0.13 (1)
Endosulfan sulfate (CAS 1031-07-8)	0.029 (2)	0.13 (1)
P051 Endrin (CAS 72-20-8)	0.0028 (2)	0.13 (1)
Endrin aldehyde (CAS 7421-93-4)	0.025 (2)	0.13 (1)
P056** Fluoride (CAAS 16964-48-8)	35	NA
P059 Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
P060 Isodrin (CAS 465-73-6)	0.021 (2)	0.066 (1)
P063 (Hydrogen cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
P065*** (Mercury fulminate) Mercury (CAS 7439-97-6)	0.030	NA
P071 Methyl parathion (CAS 298-00-0)	0.025	0.1 (1)
P073* (Nickel carbonyl) Nickel (CAS 7440-02-0)	0.32	NA
P074* (Nickel cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (Cas 57-12-5)	0.10	9.1
Nickel (CAS 7440-02-0)	0.44	NA

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
P077 p-Nitroaniline (CAS 100-01-6)	0.028 (2)	28 (1)
P082** N-Nitrosodimethylamine (CAS 62-75-9)	0.40 (2)	NA
P089 Parathion (CAS 56-38-2)	0.025	0.1 (1)
P092*** (Phenylmercury acetate) Mercury (CAS 7439-97-6)	0.030	NA
P094 Phorate (CAS 298-02-2)	0.025	0.1 (1)
P097 Famphur (CAS 52-85-7)	0.025	0.1 (1)
P098 (Potassium cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
P099* (Potassium silver cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
Silver (CAS 7440-22-4)	0.29	NA
P101 Ethyl cyanide (Propanenitrite) (CAS 107-12-0)	0.24 (2)	360 (1)
P103* (Selenourea) Selenium (CAS 7782-49-2)	1.0 (2)	NA
P104* (Silver cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amendable) (CAS 57-12-5)	0.10	9.1
Silver (CAS 7440-22-4)	0.29	NA
P106 (Sodium cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
P110*** (Tetraethyl lead) Lead (CAS 7439-92-1)	0.040	NA
P113** (Thallic oxide) Thallium (CAS 7440-28-0)	0.14 (2)	NA
P114* (Thallium selenite) Selenium (CAS 7782-49-2)	1.0	NA
P115** (Thallium(1)sulfate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
P119** (Ammonia vanadate) Vanadium (CAS 7440-62-2)	28 (2)	NA
P120** (Vanadium pentoxide) Vanadium (CAS 7440-62-2)	28 (2)	NA
P121 (Zinc cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
P123 Toxaphene (CAS 8001-35-1)	0.0095 (2)	1.3 (1)
U002 Acetone (CAS 67-64-1)	0.28	160 (1)
U003** Acetonitrile (CAS 75-05-8)	0.17	0.17
U004 Acetophenone (CAS 98-86-2)	0.010 (1)	9.7 (1)
U005 2-Acetylaminofluorene (CAS 53-96-3)	0.059 (2)	140 (1)
U009 Acrylonitrile (CAS 107-13-1)	0.24 (2)	84 (1)
U012		

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
Aniline (CAS 62-53-3)	0.81	14 (1)
U018 Benz(a)anthracene (CAS 56-55-3)	0.059 (2)	8.2 (1)
U019 Benzene (CAS 71-34-2)	0.14 (2)	36 (1)
U022 Benzo(a)pyrene (CAS 50-32-8)	0.061 (2)	8.2 (1)
U024 Bis(2-chloroethoxy)methane (CAS 111-91-1). 0.036	7.2 (1)	
U025 Bis(2-chloroethyl)ether (CAS 111-44-4)	0.033	7.2 (1)
U027 Bis(2-chloroisopropyl)ether (CAS 39638-32-9)	0.055 (2)	7.2 (1)
U028 Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.54 (1)	28 (1)
U029 Bromomethane (Methyl bromide) (CAS 74-83-9)	0.11 (1)	15 (1)
U030 4-Bromophenyl phenyl ether (CAS 101-55-3)	0.055 (1)	15 (1)
U031 n-Butyl alcohol (CAS 71-36-3)	5.6	2.6
U032* (Calcium chromate) Chromium (Total) (CAS 7440-47-32)	0.32	NA
U036 Chlordane (alpha and gamma)(CAS 57-74-9)	0.033 (2)	0.13 (1)
U037 Chlorobenzene (CAS 108-90-7)	0.057 (2)	5.7 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
U038** Chlorobenzilate (CAS 510-15-6)	0.10 (2)	NA
U039 p-Chloro-m-cresol (CAS 59-50-7)	0.018 (2)	14 (1)
U042** 2-Chloroethylvinyl (CAS 110-75-8)	0.057	NA
U043 Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
U044 Chloroform (CAS 67-66-3)	0.046 (2)	5.6 (1)
U045 Chloromethane (Methyl chloride) (CAS 74-87-3). 0.19 (2)	33 (1)	
U047 2-Chloronaphthalene (CAS 91-58-7)	0.055 (2)	5.6 (1)
U048 2-Chlorophenol (CAS 95-57-8)	0.044 (2)	5.7 (1)
U050 Chrysene (CAS 218-01-9)	0.059 (2)	8.2 (1)
U051* (Creosote)		
Naphthalene (CAS 91-20-3)	0.031	1.5 (1)
Pentachlorophenol (CAS 87-86-5)	0.18	7.4 (1)
Phenanthrene (CAS 85-01-8)	0.031	1.5 (1)
Pyrene (CAS 129-00-0)	0.028	1.5 (1)
Toluene (CAS 108-88-3)	0.028	28 (1)
Xylenes (Total)	0.032	33 (1)
Lead (CAS 7439-92-1)	0.037	NA
U052 (Cresols--Cresylic acid)		
o-Cresol (CAS 95-48-7)	0.11 (2)	5.6 (1)
Cresols (m- and p- isomers)	0.77 (2)	3.2 (1)
U057** Cyclohexanone (CAS 108-94-1)	0.36	NA

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
U060 (DDD)		
o,p'-DDD (CAS 53-19-0)	0.023	0.087 (1)
o,p'-DDD (CAS 72-54-8)	0.023	0.087 (1)
U061 (DDT)		
o,p'-DDT (CAS 780-02-6)	0.0039 (2)	0.087 (1)
p,p'-DDT (CAS 50-29-3)	0.0039 (2)	0.087 (1)
o,p'-DDD (CAS 53-19-0)	0.023 (2)	0.087 (1)
p,p'-DDD (CAS 72-54-8)	0.023 (2)	0.087 (1)
o,p'-DDE (CAS 3424-82-6)	0.031 (2)	0.087 (1)
p,p'-DDE (CAS 72-55-9)	0.031 (2)	0.087 (1)
U063		
Dibenzo(a,h)anthracene (CAS 53-70-3)	0.055 (2)	8.2 (1)
U066		
1,2-Dibromo-3-chloropropane (CAS 96-12-8)	0.11 (2)	15 (1)
U067		
1,2-Dibromo ethane (Ethylene dibromide) (CAS 106-93-4)	0.028 (2)	15 (1)
U068		
Dibromethane (CAS 74-95-3)	0.11 (2)	15 (1)
U069		
Di-n-butyl phthalate (CAS 84-74-2)	0.54 (1)	28 (1)
U070		
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	6.2 (1)
U071		
m-Dichlorobenzene (CAS 541-73-1)	0.036	6.2 (1)
U072		
p-Dichlorobenzene (CAS 104-46-7)	0.090 (2)	6.2 (2)
U075		
Dichlorodifluoromethane (CAS 75-71-8)	0.23 (2)	7.2 (1)
U076		

(continued)



# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
1,1-Dichloroethane (CAS 75-34-3)	0.059 (2)	7.2 (1)
U077		
1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	7.2 (1)
U078		
1,1-Dichloroethylene (CAS 75-35-4)	0.025 (2)	33 (1)
U079 (1,2-Dichloroethylene)		
trans-1,2-Dichloroethylene (CAS 156-60-5)	0.054 (2)	33 (1)
U080		
Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
U081		
2,4-Dichlorophenol (CAS 120-83-2)	0.044 (2)	14 (1)
U082		
2,6-Dichlorophenol (CAS 87-65-0)	0.044 (2)	14 (1)
U083		
1,2-Dichloropropane (CAS 78-87-5)	0.85 (2)	18 (1)
U084 (1,3-Dichloropropene)		
cis-1,3-Dichloropropylene (CAS 10061-01-5)	0.036 (2)	18 (1)
trans-1,3-Dichloropropylene (CAS 10061-02-6)	0.036 (2)	18 (1)
U088		
Diethyl phthalate (CAS 84-66-2)	0.54 (2)	28 (1)
U093**		
p-Dimethylaminoazobenzene (CAS 60-11-7)	0.13 (2)	NA
U101		
2,4-Dimethylphenol (CAS 105-67-9)	0.036 (2)	14 (1)
U102		
Dimethyl phthalate (CAS 131-11-3)	0.54 (1)	28 (1)
U105		
2,4-Dinitrotoluene (CAS 121-14-2)	0.32 (2)	140 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
U106 2,6-Dinitrotoluene (CAS 606-20-2)	0.55 (2)	28 (1)
U107 Di-n-octyl phthalate (CAS 117-84-0)	0.54 (1)	28 (1)
U108 1,4-Dioxane (CAS 123-91-1)	0.12 (2)	170 (1)
U111 Di-n-propylnitrosamine (CAS 621-64-7)	0.40 (20)	14 (1)
U112 Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
U117 Ethyl ether (CAS 60-29-7)	0.12 (2)	160 (1)
U118 Ethyl methacrylate (CAS 97-63-2)	0.14 (2)	160 (1)
U120 Fluoranthene (CAS 206-44-0)	0.068 (2)	8.2 (1)
U121 richloromonofluoromethane (CAS 75-69-4)	0.020 (2)	33 (1)
U127 Hexachlorobutadiene (CAS 118-74-1)	0.055 (2)	37 (1)
U128 Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)	28 (1)
U129 (Lindane)		
alpha-BHC (CAS 319-84-6)	0.00014 (2)	0.66 (1)
beta-BHC (CAS 319-85-7)	0.00014 (2)	0.66 (1)
Delta-BHC (CAS 319-86-8)	0.023 (2)	0.66 (1)
gamma-BHC (Lindane) (CAS 58-89-9)	0.0017 (2)	0.66 (1)
U130 Hexachlorocyclopentadiene (CAS 77-47-7)	0.057 (2)	3.6 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
U131 Hexachloroethane (CAS 67-72-1)	0.055 (2)	28 (1)
U134** (Hydrogen fluoride) Fluoride (CAS 16964-48-8)	35	NA
U136* (Cacodylic acid) Arsenic (CAS 7440-38-2)	0.79	NA
U137* Indeno(1,2,3-c,d)pyrene (CAS 193-39-5)	0.0055 (2)	6.2 (1)
U138 Iodomethane (CAS 74-88-4)	0.19 (2)	65 (1)
U140 Isobutyl alcohol (CAS 78-83-1)	5.6	170 (1)
U141 Isosafrole (CAS 120-58-1)	0.081	2.6 (1)
U142 Kepone (CAS 143-50-8)	0.0011	0.13 (1)
U144* (Lead acetate) Lead (CAS 7439-92-1)	0.040	NA
U145* (Lead phosphate) Lead (CAS 7439-92-1)	0.040	NA
U146* (Lead subacetate) Lead (CAS 7439-92-1)	0.040	NA
U151*** Mercury (CAS 7439-97-6)	0.030	NA
U152 Methacrylonitrile (CAS 126-98-7)	0.24 (2)	84 (1)
U154 Methanol (CAS 67-56-1)	5.6	NA

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
U155 Methapyrilene (CAS 91-80-5)	0.081	1.5 (1)
U157 3-Methylcholanthrene (CAS 56-49-5)	0.0055 (2)	15 (1)
U158 4,4'-Methylenebis(2-chloroaniline) (CAS 101-14-4)	0.50 (2)	35 (1)
U159 Methyl ethyl ketone (CAS 78-93-3)	0.28	36 (1)
U161 Methyl isobutyl ketone (CAS 108-10-1)	0.14	33 (1)
U162 Methyl methacrylate (CAS 60-62-6)	0.14	160 (1)
U165 Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
U168** 2-Naphthylamine (CAS 91-59-8)	0.52 (2)	NA
U169 Nitrobenzene (CAS 98-95-3)	0.068 (2)	14
U170 4-Nitrophenol (CAS 100-02-7)	0.12 (2)	29 (1)
U172 N-Nirosodi-n-butylamine (CAS 924-16-3)	0.040 (2)	17 (1)
U174 N-Nitrosodiethylamine (CAS 55-18-5)	0.40 (2)	28 (1)
U179 N-Nitrosopiperidine (CAS 100-75-4)	0.013 (2)	35 (1)
U180 N-Nitropyrrolidine (CAS 930-55-2)	0.013 (2)	35 (1)

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
U181 5-Nitro-o-toluidine (CAS 99-55-8)	0.32 (2)	28 (1)
U183 Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	37 (1)
U185 Pentachloronitrobenzene (CAS 82-68-8)	0.055 (2)	4.8 (1)
U187 Phenacetin (CAS 62-44-2)	0.081	16 (1)
U188 Phenol (CAS 108-95-2)	0.039	6.2 (1)
U190 Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid)	0.54 (1)	28 (1)
U192 Pronamide (CAS 23950-58-5)	0.093	1.5 (1)
U196 Pyridine (CAS 110-86-1)	0.014 (2)	16 (1)
U203 Safrole (CAS 94-59-7)	0.081	22 (1)
U204* (Selenium dioxide) Selenium (CAS 7782-49-2)	1.0	NA
U205* (Selenium sulfide) Selenium (CAS 7782-49-2)	1.0	NA
U207 1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	19
U208 1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	42
U209		

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
1,1,2,2-Tetrachloroethane (CAS 79-34-5)	0.057 (2)	42 (1)
U210 Tetrachloroethylene (CAS 127-18-4)	0.056 (2)	5.6 (1)
U211 Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	5.6 (1)
U214** (Thallium(I)acetate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U215** (Thallium(I)carbonate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U216** (Thallium(I)chloride) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U217** (Thallium(I)nitrate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
U220 Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
U225 Tribromomethane (Bromoform) (CAS 75-25-2)	0.63 (2)	15 (1)
U226 1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
U227 1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	5.6 (1)
U228 Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
U235 tris-(2,3-Dibromopropyl) phosphate	0.025	0.10 (1)
U239 Xylenes	0.32 (2)	28 (1)
U240		

(continued)

# Appendix 4-10 (continued)

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/kg) Notes	Nonwastewaters (mg/kg) Notes
2,4-Dichlorophenoxyacetic acid (CAS 94-75-7)	0.72	10 (1)
U243 Hexachloropropene (CAS 1888-71-7)	0.035 (2)	28
U247 Methoxychlor (CAS 72-43-5)	0.25 (2)	0.18 (1)
U247 Methoxychlor (CAS 72-43-5)	0.25 (2)	0.18 (1)
*See also Table CCWE in 268.41		
**See also Table 2 in 268.42		
***See also Table CCWE in 268.41 and Table 2 in 268.42		
(1) Treatment standards for this organic constituent were established based upon incineration in units operated in accordance with the technical requirements of 40:264 Subpart O or Part 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may certify compliance with these treatment standards according to provisions in 40:268.7.		
(2) Based on analysis of composite samples.		
(3) As analyzed using SW-846 Method 9010 or 9012; sample size 10 gram; distillation time: one hour and fifteen minutes.		





#### Appendix 4-11

#### Maximum Concentrations of Constituents for Groundwater Protection (40 CFR 264.94, Table1)

Constituent	Maximum Concentration (mg <sup>3</sup> )
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.01
2,4,5-TP	0.01
Toxaphene	0.005
2,4-D	0.1

(continued)



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>HAZARDOUS WASTE MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA      C      RMA	<b>REVIEWER CHECKS:</b>		

## **Section 5**

### **Pesticide Management**

<b>A. Applicability</b>	<b>1</b>
<b>B. Federal Legislation</b>	<b>1</b>
<b>C. State/Local Requirements</b>	<b>1</b>
<b>D. Key Compliance Requirements</b>	<b>2</b>
<b>E. Key Compliance Definitions</b>	<b>2</b>
<b>GUIDANCE FOR CHECKLIST USERS</b>	<b>5</b>

**The contents of this section are the minimum requirements the assessor must review. The assessor must also review applicable state and local regulations.**

## SECTION 5

### PESTICIDE MANAGEMENT

#### A. Applicability

This section applies to FWS facilities which use, store, or handle pesticides. Pesticides are regulated on the Federal level (U.S. Environmental Protection Agency (USEPA)) and the state level.

#### B. Federal Legislation

- *The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*. This Act, as last amended in December 1991, 7 U.S. Code (USC) 136-136y, deals with the sale, distribution, transportation, storage, and use of pesticides. It requires the registration of new pesticides and, when pesticides are reregistered, requires that they will not present any unreasonable risks to human health or the environment if used according to label directions.
- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities it funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

#### C. State/Local Requirements

State pesticide regulatory programs are to be at least as stringent as FIFRA. State and local programs typically contain regulations which are tailored to an industry or activity which is prevalent or particularly sensitive in a state. State and local pesticide regulations in many cases provide more stringent standards or specifically identify a requirement which may be qualitatively regulated under the Federal program. State and local pesticide programs generally include regulations which address the following topics:

1. restrictions or requirements for the sale, distribution, or use of selected pesticides
2. disposal requirements for excess pesticides and pesticide wastes such as pesticide containers
3. restrictions on the control of specific animal or insect species
4. specifications for bulk pesticide storage tanks and storage facilities
5. operational requirements for selected application methods
6. recordkeeping and applicator certification requirements.

#### **D. Key Compliance Requirements**

- **Pesticide Application** - People applying restricted use pesticides must be certified to apply restricted use pesticides. Contractors used for pest management must have current state certification for the types of applications to be performed. The application of pesticides must not jeopardize the existence of threatened or endangered species (40 CFR 171.9 and 50 CFR 402).
- **Pesticide Storage, Mixing, and Preparation Facilities** - Pesticide storage, mixing, and preparation activities must provide facilities and procedures to ensure safety of personnel.
- **Highly Toxic Pesticide Storage and Use** - Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic that are labeled DANGER, POISON, or with the skull and crossbones symbol, should meet specific structural, operational, and storage requirements. These include pesticides being kept in a dry, separate room with fire protection and not near food or feed, and in containers in good condition with plainly visible labels. There should be a decontamination facility and the local fire department, hospitals, public health officials, and police departments should be notified in writing that the pesticides are being stored (GMP).
- **Pesticide Disposal** - Facilities are required to dispose of any pesticide, pesticide container, or pesticide residue in a manner consistent with labeling, not including open dumping or burning. Organic pesticides other than organic mercury, lead, cadmium, and arsenic compounds, must be disposed according to specific procedures. Options include incineration at an incinerator that meets air quality standards for gaseous emissions. Metallo-organic pesticides must be disposed of in a manner that facilitates the recovery of heavy metals (40 CFR 165.7).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **E. Key Compliance Definitions**

- **Acute LD<sub>50</sub>** - a statistically derived estimate of the concentration of a substance that would cause 50 percent mortality to the test population under specified conditions (40 CFR 152.3).
- **Caution** - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category III or IV must bear on the front panel the signal word CAUTION (see Toxicity Category) (40 CFR 156.10(h)).
- **Commercial Applicator** - a certified applicator, other than a private applicator, who uses or supervises the use of any pesticide, for any purpose, on any property, or performs other pest control related activities (40 CFR 171.2).

- *Crisis Exemption* - this is utilized in an emergency condition when the time from discovery of the emergency to the time when the pesticide use is needed is insufficient to allow for the authorization of a specific quarantine exemption or public health exemption (40 CFR 166.2).
- *Danger* - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category I must bear on the front panel the signal word DANGER (see Toxicity Category) (40 CFR 156.10(h)).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Imminent Hazard* - a situation that exists when the continued use of a pesticide during the time required for cancellation proceedings would be likely to result in unreasonable adverse effects on the environment or will involve unreasonable hazard to the survival of a species declared endangered by the Secretary of the Interior under Public Law (PL) 91-135 (40 CFR 165.1).
- *Pesticide* - any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or disinfectant; and is further categorized into the following (40 CFR 165.1):
  1. *Excess pesticides* means all pesticides that cannot be legally sold pursuant to the Act or that are to be discarded.
  2. *Organic pesticides* means carbon-containing substances used as pesticides, excluding metallo-organic compounds.
  3. *Inorganic pesticides* means noncarbon-containing substances used as pesticides.
  4. *Metallo-organic pesticides* means a class of organic pesticides containing one or more metal or metalloid atoms in the structure.
- *Pesticide Product* - a pesticide in the particular form (including composition, packaging, and labeling) in which the pesticide is, or is intended to be, distributed or sold. This includes any physical apparatus used to deliver or apply the pesticide if distributed or sold with the pesticide (40 CFR 152.3).
- *Public Health Exemption* - this may be authorized in an emergency condition to control a pest that will cause a significant risk to human health (40 CFR 166.2).
- *Quarantine Exemption* - this may be authorized in an emergency condition to control the introduction or spread of any pest new to or not theretofore known to be widely prevalent or distributed within and throughout the United States and its territories (40 CFR 166.2).
- *Restricted Use Pesticides* - pesticides designated for restricted use under the provisions of Section 3(d)(1)(c) of FIFRA (40 CFR 171.2).
- *Specific Exemption* - this exemption may be authorized in an emergency condition to avert (40 CFR 166.2):
  1. a significant economic loss
  2. a significant risk to endangered species, threatened species, beneficial organisms, or the environment.

- *Toxicity Category* - required warnings and precautionary statements are based on the Toxicity Category of the pesticide. The category is assigned on the basis of the highest hazard shown in the table listed in 40 CFR 156.10 (40 CFR 156.10(h)).
- *Warning* - the human hazard signal word required on the front panel of a pesticide container determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word **WARNING** (see 40 CFR 156.10 for listing of indicators necessary to meet specific criteria of toxicity categories) (40 CFR 156.10(h)).



**PESTICIDE MANAGEMENT**  
**GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER</b>
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Pesticide Application	5-9 through 5-14	13
Storage/Mixing/Preparation Areas	5-15 through 5-21	15
Highly and Moderately Toxic Pesticides	5-22 through 5-29	17
Mixing/Formulation Facilities	5-30	23
Agricultural Pesticides	5-31 and 5-32	25
Disposal	5-33 through 5-38	27
Dining Facilities	5-39	31



## **PESTICIDE MANAGEMENT**

### **Records to Review**

- Records of pesticides purchased by the facility (purchase orders, inventory)
- Pesticide application records
- Description of the facility's pest control program
- Certification status of pesticide applicators
- Pesticide disposal manifests
- Contract files
- Any emergency exemption granted to the FWS by the USEPA

### **Physical Features to Inspect**

- Personnel protection equipment
- Pesticide application equipment
- Pesticide storage areas, including storage containers



<b>COMPLIANCE CATEGORY:</b> <b>PESTICIDE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>ALL FACILITIES</b>  <b>5-1.</b> Actions or changes since previous review of pesticides management should be examined (GMP).  <b>5-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on pesticide management should be available at the facility (GMP).  <b>5-3.</b> FWS facilities are required to comply with state and local pesticide regulations (EO 12088, Section 1-1).	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>(NOTE: The term pesticide in this protocol refers to insecticides, rodenticides, herbicides, and other pest control chemicals (see the definition in the introduction).)</p> <p>Verify that the following documents are maintained and kept current at the facility:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards</i>.</li> <li>- 29 CFR 1910, <i>Occupational Safety and Health Standards</i>.</li> <li>- 40 CFR 152, <i>Pesticide Registration and Classification Procedures</i>.</li> <li>- 40 CFR 165, <i>Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Storage and Disposal of Pesticides and Pesticide Containers</i>.</li> <li>- 40 CFR 166, <i>Exemption of Federal and State Agencies for Use of Pesticides Under Emergency Conditions</i>.</li> <li>- 40 CFR 171, <i>Certification of Pesticide Applicators</i>.</li> <li>- 50 CFR 402, <i>Interagency cooperation - Endangered Species Act of 1973, as amended</i>.</li> <li>- State pesticide regulations.</li> </ul> <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- applicator certification</li> <li>- restricted use pesticides</li> <li>- application procedures</li> <li>- banned pesticides</li> <li>- disposal methods</li> <li>- emergency application of pesticides due to public health threats.)</li> </ul>

**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>5-4. Facilities will meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</b></p>	<p>Determine if any new regulations concerning pesticides have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p><b>5-5. FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).</b></p>	<p>Determine if the facility has received an NOV relating to pesticides.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>
<p><b>5-6. All pesticides present on the facility must be registered or ruled exempt from the registration requirements (40 CFR 152.15 through 152.30).</b></p>	<p>Verify that pesticide products at the facility are registered unless the facility or product is considered exempt, such as the following:</p> <ul style="list-style-type: none"> <li>- certain biological control agents</li> <li>- certain human drugs</li> <li>- treated articles or substances such as paint treated with a pesticide</li> <li>- pheromones and pheromone traps</li> <li>- preservatives for biological specimens</li> <li>- vitamin hormone products</li> <li>- pesticide transferred between registered establishments operated by the same producer</li> <li>- a pesticide distributed or sold under an experimental use permit</li> <li>- a pesticide transferred solely for export</li> <li>- a pesticide distributed or sold under an emergency exemption.</li> </ul>

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Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**5-7. All facilities must comply with pesticide use requirements unless an emergency exemption has been granted by the USEPA (40 CFR 166.1, 166.2, 166.20, 166.28, 166.32, 166.45, and 166.50).**

Verify that pesticide use requirements are followed unless one or more of the following emergency conditions exist:

- Specific exemptions may be authorized to avoid conditions of:
  - significant economic loss
  - significant risk to threatened or endangered species
  - significant risk to beneficial organisms
  - significant risk to the environment.
- Quarantine exemptions may be authorized to control the introduction or spread of any pest new to or unknown to be widespread throughout the United States and its territories.
- Public health exemptions may be authorized to control a pest that imposes significant risk to human health.
- Crisis exemptions may be utilized when the time constraint between discovery, and implementation of pesticide use will not allow a specific, quarantine, or public health exemption to be issued.

Verify that applications for exemptions are submitted to the Regional Administrator in writing and include:

- a description of the pesticide
- the proposed use
- any alternative means of control and why those means are not feasible.

Verify that exemptions are issued for a specific length of time, as follows:

- no more than 1 yr for specific and public health exemptions
- for no longer than 3 yr for a quarantine permit, but it may be renewed
- no longer than 15 days (unless an application for another type of exemption has been submitted) for an crisis exemption.

Verify that any unexpected adverse affects from the use of a pesticide under exemption conditions are be reported to the USEPA.

Verify that a report summarizing the use of a pesticide under an exemption was submitted within 6 mo after the expiration of the exemption to the USEPA (3 mo for a crisis exemption).

**5-8. Spills of pesticides should be contained and reported in accordance with the spill plan (GMP).**

Determine if the facility has had any spills of pesticides.

Verify that pesticide spills are addressed in the Oil and Hazardous Materials Spill Plan.





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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PESTICIDE APPLICATION</b></p> <p><b>5-9.</b> Persons applying restricted use pesticides must be certified to apply restricted use pesticides (40 CFR 171.9).</p> <p><b>5-10.</b> Personnel routinely applying any pesticides should be trained in safety-procedures and application procedures (GMP).</p> <p><b>5-11.</b> Health monitoring should be provided for government personnel applying pesticides other than bug bombs, space sprays, and no-pest strips (GMP).</p> <p><b>5-12.</b> Public safety should be ensured when applying or using pesticides (GMP).</p>	<p>Determine if pesticide applicators are trained and/or certified.</p> <p>Verify that training recertification is scheduled and performed as required to maintain certification and that certification is relevant to the pest management activities undertaken.</p> <p>Verify the certification status of contractors used for pest management.</p> <p>(NOTE: Check the list of restricted use pesticides in Appendix 5-1.)</p> <p>Determine if personnel at the facility routinely apply pesticides.</p> <p>Verify that personnel is trained in appropriate handling and use procedures.</p> <p>Verify that all pest management personnel have received baseline physical examinations within 30 days of starting pest management work.</p> <p>Verify that pest management personnel receive additional physical examinations once each year.</p> <p>Verify that cholinesterase tests are given to pest management personnel working regularly with pesticides which contain organophosphates or N-alkyl-carbamates.</p> <p>Verify the elimination of hazardous exposure to the general public by checking for the following:</p> <ul style="list-style-type: none"> <li>- appropriate signs for treatment area are posted</li> <li>- scheduling for low use periods or restricted usage for a number of days</li> <li>- water use restrictions and reentry times are followed according to the pesticide labels.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>5-13.</b> Records should be maintained of each application of a pesticide, whether performed by facility staff or contract labor, and retained at the facility (GMP).</p>	<p>Verify that records are kept on file for a minimum of 2 yr.</p>
<p><b>5-14.</b> Facilities must ensure that the use of pesticides does not jeopardize the existence of threatened or endangered species (50 CFR 402.01 para 2(d)).</p>	<p>Determine if surveys have been conducted to identify the presence of threatened or endangered species in areas where pesticides are used.</p> <p>Determine what measures are taken to ensure that threatened or endangered species are not impacted.</p> <p>Verify that applications are made according to label instructions regarding the protection of endangered species.</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>STORAGE/MIXING/ PREPARATION AREAS</b></p> <p><b>5-15.</b> Facilities are required to store any pesticide, pesticide container, or pesticide residue according to specific restrictions (40 CFR 165.7).</p> <p><b>5-16.</b> Security measures should assure that only authorized persons can access pesticide storage, mixing, and preparation areas (GMP).</p> <p><b>5-17.</b> Pesticide storage, mixing, and preparation facilities must provide facilities and procedures to ensure safety of personnel (29 CFR 1910.133).</p>	<p>(NOTE: Storage areas must also meet the general requirements for the storage of hazardous materials found in 29 CFR 1910.106, see Section 3, Hazardous Materials Management).</p> <p>Verify that pesticide, pesticide container, and/or pesticide residues are stored such that it is not inconsistent with labeling.</p> <p>Verify that a climb-resistant fence completely encloses facility.</p> <p>Verify that vehicles used to transport pesticides have locking compartments.</p> <p>Determine if a ventilation system is specifically provided for all indoor pesticide mixing/preparation areas.</p> <p>Verify that an emergency deluge shower and eyewash station are located to provide immediate access to all personnel performing mixing.</p> <p>Verify that personal protective clothing and equipment is provided and used by pest management personnel. The following equipment depends upon magnitude and type of operations:</p> <ul style="list-style-type: none"> <li>- respirators</li> <li>- masks</li> <li>- gloves</li> <li>- safety shoes</li> <li>- coveralls</li> <li>- specialized personal protective equipment for fumigation.</li> </ul> <p>Verify that operations include health and safety procedures emphasizing good work habits, reduction or elimination of hazards, and use of personal protective equipment.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>5-18.</b> A spill containment system constructed of impervious materials should provide containment for pesticide storage, mixing, preparation and management areas (GMP).</p>	<p>Verify that there is curbing around the required areas.</p> <p>Determine if there are drains or cracks in floors.</p> <p>Determine if pest management shop personnel are familiar with spill response procedures.</p> <p>Verify that spill response procedures are written and understood by staff.</p>
<p><b>5-19.</b> Storage facilities for pesticides should have ventilation at a rate of 10 air changes/hour (GMP).</p>	<p>Verify that storage facilities for pesticides have ventilation at a rate of 10 air changes/hour.</p>
<p><b>5-20.</b> Storage facilities for pesticides should have separate drainage systems and fire extinguishers (GMP).</p>	<p>Verify that fire extinguishers are installed near the door of pesticide storage rooms.</p> <p>Verify that the drainage systems are separated from the regular systems.</p>
<p><b>5-21.</b> Pesticide storage areas should be inspected quarterly by certified applicator personnel and safety and fire prevention officer (GMP).</p>	<p>Verify that pesticide storage areas are inspected quarterly.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HIGHLY AND MODERATELY TOXIC PESTICIDES</b></p> <p><b>5-22.</b> Storage facilities for pesticides and excess pesticides classes as highly toxic or moderately toxic which are required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol should meet specific structural requirements (GMP).</p> <p><b>5-23.</b> The storage of pesticides and excess pesticides classed as highly toxic or moderately toxic which are required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol should meet specific operational requirements (GMP).</p>	<p>Verify that storage is in a dry, separate room, building, or covered area where fire protection is provided.</p> <p>Verify that when relevant and practicable, the entire storage facility is secured by a climb-proof fence and the doors and gates are kept locked.</p> <p>Verify that pesticides are not stored near food or feed.</p> <p>(NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(c)(1).)</p> <p>Verify that pesticide containers are stored with the label plainly visible.</p> <p>Verify that all containers are in good condition.</p> <p>Verify that the lids and bungs on metal or rigid plastic containers are tight.</p> <p>Verify that the pesticides are segregated.</p> <p>Verify that a complete inventory is kept indicating the number and identity of containers in a storage unit.</p> <p>Verify that containers are regularly inspected for corrosion and leaks and that absorbent material is available for spill cleanup.</p> <p>Verify that diluted oil based pesticides are stored separately from other materials since they are flammable.</p> <p>Verify that excess pesticides and containers are segregated.</p> <p>(NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(d).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>5-24.</b> Pest management programs which use pesticides classed as highly toxic or moderately toxic and are required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol on the label should have decontamination facilities (GMP).</p>	<p>Determine if facilities are available for personnel decontamination and where they are located.</p> <p>Determine if facilities are available for the decontamination of equipment, including vehicles which have been used for pesticide applications.</p> <p>Verify that berms, curbing, surfaces, and catchment drains which are used to impound washwater resulting from decontamination are impervious.</p> <p>Verify that drains impound washwater and do not connect to sanitary sewer or stormwater systems.</p> <p>Verify that the procedure for disposal of washwater resulting from decontamination activities is the same as for excess pesticides.</p> <p>(NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(c)(3) and 165.10(c)(4).)</p>
<p><b>5-25.</b> Equipment used for pesticides applications may not be removed from a decontamination site unless thoroughly decontaminated (GMP).</p>	<p>Verify that prior to removal from a site, vehicles are decontaminated.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 165.10(c)(2) and 165.10(e)(1)(v).)</p>

COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
<p><b>5-26.</b> Storage of pesticides and excess pesticides that are classed as highly toxic or moderately toxic and are required to be labeled DANGER, POISON, WARNING, or the skull and crossbones should meet specific requirements (GMP).</p>	<p>Verify that the site location, where possible, is in an area where flooding is unlikely and where hydrogeologic conditions prevents contamination of any water system by runoff or percolation by:</p> <ul style="list-style-type: none"> <li>- inspecting area surrounding facilities and determine proximity to surface water</li> <li>- noting location relative to floodplains, depth of groundwater, and general soil types and typical permeabilities</li> <li>- verifying that the spill management system is in existence.</li> </ul> <p>Verify that an environmental monitoring system exists for facilities which do not have spill management system when the facility handles large quantities of pesticides and is located near sensitive environmental receptor. The reviewer should:</p> <ul style="list-style-type: none"> <li>- note approximate quantity of pesticides and location of sensitive environmental receptors</li> <li>- check whether groundwater, or surface water, or air monitoring program exists to determine any effects caused by pesticide storage, mixing and preparation</li> <li>- inspect facility operations and layout to determine if operations are likely to allow runoff of water which may have contacted pesticides.</li> </ul> <p>Verify that, when needed, drainage from the site is contained by natural or artificial barriers or dikes.</p> <p>(NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(b).)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>5-27.</b> Facilities which store/use pesticides that are classed as highly toxic or moderately toxic and are required to bear the signal words <b>DANGER, POISON, WARNING</b>, or the skull and crossbones symbol should provide facilities and procedures to ensure the safety of personnel (GMP).</p>	<p>Verify that no food consumption, drinking, smoking, or tobacco use is undertaken in any area where pesticides are present.</p> <p>Verify that the following practices are performed in pest management operations:</p> <ul style="list-style-type: none"> <li>- persons handling pesticides keep hands away from mouths and eyes and wear rubber gloves during all pesticide handling</li> <li>- persons handling pesticides wash hands immediately upon completion of working with pesticides and always prior to eating, smoking or using toilet facilities</li> <li>- persons handling concentrated pesticides wear protective clothing which is removed if found to be contaminated</li> <li>- a stock of protective clothing is available</li> <li>- self-contained breathing apparatus and impermeable suits are available when handling pesticides which present the potential of being absorbed through the skin</li> <li>- inspections are made once a month to determine if any pesticide containers are leaking</li> <li>- pesticide containers are inspected for leakage prior to handling</li> <li>- unauthorized persons are not allowed in storage areas.</li> </ul> <p>Verify that the following accident prevention measures are done:</p> <ul style="list-style-type: none"> <li>- containers are not manhandled</li> <li>- unauthorized persons are not allowed in the storage area</li> <li>- pesticides are not stored next to food or feed or other articles intended for consumption by humans or animals</li> <li>- all vehicles are inspected prior to departure.</li> </ul> <p>(NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(e) and 165.10(f).)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>5-28.</b> Pesticide storage facilities and equipment which contain or use pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or the skull and crossbones symbol should have signs and safety procedures posted (GMP).</p> <p><b>5-29.</b> Where large quantities of pesticides classed as highly toxic or moderately toxic and are labeled DANGER, POISON, WARNING, or the skull and crossbones symbol are being stored, or other conditions warrant, the local fire department, hospitals, public health officials, and police department should be notified in writing that pesticides are being stored in the event of a fire (GMP).</p>	<p>Verify that signs which read DANGER POISON, PESTICIDE STORAGE, are placed on or near entries to storage facilities.</p> <p>Verify that safety precautions and accident prevention measures are posted.</p> <p>Verify that an inventory of pesticides is displayed outside of the storage facility identifying all chemicals in storage.</p> <p>Verify that mobile equipment used for pesticide applications is labeled CONTAMINATED WITH PESTICIDES.</p> <p>(NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(c)(2) through 165.10(c)(3), 165.10(e), and 165.10(g)(2).)</p> <p>Verify that notification has been submitted and includes a statement of the hazards that pesticides may present during a fire.</p> <p>Verify that a floor plan of the storage facility indicating the location of the different pesticide classifications has been submitted to the fire department.</p> <p>Verify that the fire chief has the home telephone numbers of the person(s) responsible for the pesticide storage facility.</p> <p>(NOTE: These GMPs are based on recommendations found in 40 CFR 165.10(g)(1).)</p>



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**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**MIXING/  
FORMULATION  
FACILITIES**

**5-30.** Mixing/formulation areas should meet specific standards (GMP).

Determine if the facility has any mixing/formulation areas.

Verify that enclosed mixing areas have a local exhaust ventilation with a minimum face velocity of 100 linear feet per minute to control toxic vapors.

Verify that drainage systems are separate from the regular system.



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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>AGRICULTURAL PESTICIDES</b></p> <p><b>5-31.</b> Agricultural pesticides must be applied in a manner that workers or other persons, except those knowingly involved in the application, are not exposed either directly or through drift (40 CFR 170.3(a) and 170.4(c)).</p> <p><b>5-32.</b> Workers not wearing protective clothing shall not be allowed to enter a field treated with sprays until specific conditions are met (40 CFR 170.3(b) and 170.4(c)).</p>	<p>Determine if the facility applies agricultural pesticides.</p> <p>Verify that the area being treated is vacated by unprotected persons.</p> <p>(NOTE: These requirements do not pertain to:</p> <ul style="list-style-type: none"> <li>- mosquito abatement treatment and related public pest control programs</li> <li>- greenhouse treatments which are applied in accordance with labeling directions and restrictions</li> <li>- livestock and other animal treatments which are applied in accordance with labeling directions and restrictions</li> <li>- treatment of golf courses and similar nonagricultural areas which are applied in accordance with labeling directions and restrictions.)</li> </ul> <p>Verify that workers are warned when a field is to be treated and when a field has been treated.</p> <p>Verify that workers without protective clothing do not enter fields that have been sprayed until sprays have been dried or dusts have settled.</p> <p>Verify that if the following pesticides are used, the indicated reentry times are observed:</p> <ul style="list-style-type: none"> <li>- ethyl parathion: 48 h</li> <li>- methyl parathion: 48 h</li> <li>- guthion: 24 h</li> <li>- demeton: 48 h</li> <li>- azodrin: 48 h</li> <li>- phosalone: 24 h</li> <li>- carbophenothion: 48 h</li> <li>- metasystox-R: 48 h</li> <li>- EPN: 24 h</li> <li>- bidrin: 48 h</li> <li>- endrin: 48 h</li> <li>- ethion: 24 h.</li> </ul> <p>(NOTE: These requirements do not pertain to:</p> <ul style="list-style-type: none"> <li>- mosquito abatement treatment and related public pest control programs</li> <li>- greenhouse treatments which are applied in accordance with labeling directions and restrictions</li> <li>- livestock and other animal treatments which are applied in accordance with labeling directions and restrictions</li> <li>- treatment of golf courses and similar nonagricultural areas which are applied in accordance with labeling directions and restrictions.)</li> </ul>



**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**DISPOSAL**

**5-33.** Facilities are required to dispose of any pesticide, pesticide container, or pesticide residue according to specific restrictions (40 CFR 165.7).

Verify that pesticide, pesticide container, and/or pesticide residues are disposed of such that:

- disposal is not inconsistent with labeling
- open dumping of pesticides or pesticide containers is not done
- open burning is not done except when allowed by state and local regulation
- water dumping or ocean dumping does not occur.

**5-34.** Organic pesticides, except organic mercury, lead, cadmium, and arsenic compounds should be disposed of according to specific procedures (GMP).

Determine if the facility uses organic pesticides.

Verify that the organic pesticides are disposed of through incineration at an incinerator which meets the air quality standards for gaseous emissions, or in a specially designated landfill if incineration is not available, or by another approved method.

(NOTES: Municipal solid waste incinerators may be allowed to be used to incinerate pesticides and pesticide containers if they meet criteria of the state.)

(NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)

**5-35.** Metallo-organic pesticides, except organic mercury, lead, cadmium, or arsenic compounds should be disposed of according to specific procedures (GMP).

Determine if the facility uses metallo-organic pesticides.

Verify that metallo-organic pesticides are subjected to an appropriate chemical or physical treatment to recover the heavy metals from the hydrocarbon structure prior to disposal.

Verify that metallo-organic pesticides are disposed of through incineration at an approved incinerator, or in a specially designated landfill, or by another approved method.

(NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)

**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>5-36.</b> Organic mercury, lead, cadmium, arsenic, and all inorganic pesticides should be disposed of according to specific procedures (GMP).</p> <p><b>5-37.</b> Containers should be disposed of according to their classification as either a Group I, Group II, or Group III container (GMP).</p>	<p>Determine if the facility uses organic mercury, lead, cadmium, arsenic, or any inorganic pesticides.</p> <p>Verify that these pesticides are converted to a nonhazardous compound and the heavy metal resources are recovered.</p> <p>Verify that, if chemical deactivation facilities are not available, these pesticides are encapsulated and buried in a specially designated landfill and records sufficient to permit location and retrieval are maintained.</p> <p>Determine if an alternate method of disposal has been approved.</p> <p>(NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)</p> <p>Determine which of the following types of containers the facility has onsite:</p> <ul style="list-style-type: none"> <li>- Group I Containers: combustible containers which formally contained organic or metallo-organic pesticides</li> <li>- Group II Containers: noncombustible containers which formally held organic or metallo-organic pesticides</li> <li>- Group III Containers: containers (both combustible and noncombustible) which formerly held organic mercury, lead, cadmium, or arsenic or inorganic pesticides.</li> </ul> <p>Verify that Group I containers are disposed of in an incinerator or buried in a specially designated landfill.</p> <p>(NOTE: Small quantities of Group I containers may be burned in open fields by the user of the pesticide when allowed by the state.)</p> <p>Verify that Group II containers are triple rinsed.</p> <p>Verify that Group II containers in good condition are returned to the manufacturer, formulator, or drum reconditioner to reuse with the same chemical class of pesticides.</p> <p>Verify that Group II containers which are going to be transported to a facility for recycle as scrap metal or for disposal are punctured.</p> <p>Determine if rinsed Group II containers are crushed and disposed of in a landfill according to state or local requirements.</p> <p>Verify that unrinsed Group II containers are disposed of in a specially designated landfill or incinerated.</p> <p>Verify that Group III containers which are not rinsed are encapsulated and disposed of in a specially designated landfill.</p>



COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT Fish and Wildlife Service	
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:
5-37. (continued)	<p>(NOTE: Group III containers which are rinsed may be disposed of in a sanitary landfill.)</p> <p>(NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)</p>
5-38. Pesticide residues and rinse liquids should be added to spray mixtures or disposed of according to their pesticide type (GMP).	<p>Verify that pesticide residues or rinse liquids are reused.</p> <p>Verify that if they are not reused they are disposed of according to their pesticide type.</p> <p>(NOTE: These GMPs are based on guidelines found in 40 CFR 165.8 and 165.9.)</p>



**COMPLIANCE CATEGORY:  
PESTICIDE MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**DINING FACILITIES**

**5-39.** Dining facilities should be notified at least 24 h in advance of a pesticide application (GMP).

Verify that food services personnel are notified of scheduled applications.



**Appendix 5-1**  
**Restricted Use Pesticides**  
**(40 CFR 152.175)**

The following uses of pesticide products containing the active ingredients specified below have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Acrolein	As sole active ingredient. No mixtures registered.	All uses.	Restricted	Inhalation hazard to humans. Residue effects on avian species and aquatic organisms.
Acrylonitrile	In combination with carbon tetrachloride. No registrations as the sole active ingredient.	*do	do	Other hazards-accident history of acrylonitrile and carbon tetrachloride products.
Aldicarb	As sole active ingredient. No mixtures registered.	Ornamental uses (indoor and outdoor). Agricultural crop uses.	do Under further evaluation.	Other hazards-accident history.
Allyl alcohol	All formulations.	All uses.	Restricted	Acute dermal toxicity.
Aluminum phosphide	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Azinphosmethyl	All liquids with a concentration greater than 13.5%.	do	do	do
	All other formulations.	do	Under further evaluation.	
Calcium cyanide	As sole active ingredient. No mixture registered.	do	Restricted	do
*do means same as above.				

(continued)

## Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Carbofuran	All concrete suspensions and wettable powders 40% and greater.	do	do	Acute inhalation toxicity.
	All granular formulations.	Rice	Under evaluation.	
	All granular and fertilizer formulations.	All uses except rice.	do	
Chlorfenvinphos	All concentrate solutions or emulsifiable or concentrates 21% and greater.	All uses (domestic and nondomestic).	Restricted	Acute dermal toxicity.
Chloropicrin	All formulations greater than 2%.	All uses.	Restricted	Acute inhalation toxicity
	All formulations.	Rodent control	Restricted	Hazard to non-target organisms.
	All formulations 2% and less.	Outdoor uses (other than rodent control).	Unclassified	
Clonitralid	All wettable powders 70% and greater.	All uses.	do	Acute inhalation toxicity.
	All granulars and wettable powders.	Molluscide uses.	do	Effects on aquatic organisms.
	Pressurized sprays 0.55% and less.	Hospital antiseptics.	Unclassified	
Cycloheximide	All formulations greater than 4%.	All uses.	Restricted.	Acute dermal toxicity.
	All formulations 0.027% to 4%.	All uses.	Under evaluation.	
	All formulations 0.027% and less.	Domestic uses.	Unclassified	
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Demeton	1% fertilizer formulation, 1.985% granular.	All uses including domestic uses.	Restricted	Domestic uses: Acute oral toxicity. Acute dermal toxicity. Nondomestic outdoor uses. Residue effects on avian and mammalian species.
	All granular formulations emulsifiable concentrates and concentrated solutions.	All uses.	do	Acute dermal toxicity. Residue effects on mammalian and avian species.
Dicrotophos	All liquid formulations 8% and greater.	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species (except for tree injections).
Dioxathion	All concentrate solutions or emulsifiable concentrates <sup>2</sup> greater than 30%.	All uses.	Restricted	Acute dermal toxicity.
	Concentrate solutions or emulsion concentrates <sup>2</sup> 30% and less and wettable powders 25% and less.	Livestock and agricultural uses (nondomestic uses only).	Unclassified	
	All solutions <sup>2</sup> 3% and greater.	Domestic	Restricted	do
	3% and greater 2.5% solutions <sup>2</sup> with toxaphene and malathion.	All uses.	Under evaluation.	
*do means same as above.				

(continued)

## Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Disulfoton	All emulsifiable concentrates 65% and greater, all emulsifiable concentrates and concentrate solutions 21% and greater with fensulfothion 43% and greater, all emulsifiable concentrates 32% and greater in combination with 32% fensulfothion and greater.	do	Restricted	do  Acute inhalation toxicity.
	Nonaqueous solution 95% and greater.			
	Granular formulations 10% and greater.	Commercial seed treatment.	Restricted	Acute dermal toxicity.
Endrin		Indoor uses (greenhouse).	do	Acute inhalation toxicity.
	All emulsions, dusts, wettable powders, pastes, and granular formulations 2% and above.	All uses.	Restricted	Acute dermal toxicity. Hazard to nontarget organisms.
	All concentrations less than 2%.	do	do	Hazard to non-target organisms.
EPN	All liquid and dry formulations greater than 4%.	All uses.	Restricted	Acute dermal toxicity; acute inhalation toxicity; residue effects on avian species.
		Aquatic uses.	Restricted	Effects on aquatic organisms.
*do means same as above.				

(continued)



# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Ethoprop	Emulsifiable concentrates 40% and greater.	do	do	Acute dermal toxicity.
	All granular and fertilizer formulations.	do	Under evaluation.	
Ethyl parathion	All granular and dust formulations greater than 2% fertilizer formulations, wettable powders, emulsifiable concentrates, concentrated suspensions, concentrated solutions. Smoke fumigants.	do	Restricted	Inhalation hazard to humans. Acute dermal toxicity. Residue effects or mammalian, aquatic, avian species. Inhalation hazard to humans.
		do	do	
	Dust and granular formulations 2% and below.	do	do	Other hazards-accident history.
Fenamiphos	Emulsifiable concentrates 35% and greater.	do	do	Acute dermal toxicity.
Fensulfothion	Concentrate solutions 63% and greater, all emulsifiable concentrates and concentrate solutions 43% and greater with disulfoton 21% and greater all emulsifiable concentrates 32% and greater in combination with disulfoton 32% and greater.	do	Restricted.	do
	Granular formulations 10% and greater.			Acute inhalation toxicity.
		Indoor uses (greenhouse).	do	do
Fluoroacetamide/1081	As sole active ingredient in baits. No mixtures registered.	All uses.	Restricted.	Acute oral toxicity.
*do means same as above.				

(continued)

## Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Fonofos	Emulsifiable concentrates 44% and greater.	All uses.	do	Acute dermal toxicity.
	Emulsifiable concentrates 12.6% and less with pebulate 50.3% and less.	Tobacco	Unclassified	
Hydrocyanic acid	As sole active ingredient. No mixtures registered.	do	do	Inhalation hazard to humans.
Methamidophos	Liquid formulations 40% and greater.	All uses.	Restricted	Acute dermal toxicity; residue effects on avian species.
	Dust formulations 2.5% and greater.	All uses.	Restricted	Residual effects on avian species.
Methidathion	All formulations.	All uses except stock safflower and sunflower.	Restricted	Residue effects on avian species.
	All formulations.	Nursery stock, safflower, and sunflower	Unclassified	Residue effects on avian species.
*do means same as above.				

(continued)

## Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Methomyl	As sole active ingredient in 1% to 2.5 baits (except 1% fly bait).	Nondomestic outdoor agricultural crops, ornamental and turf. All other registered uses.	Restricted.	Residue effects on mammalian species.
	All concentrated solution formulations.	do	do	Other hazards-accident history.
	90% wettable powder formulations (not in water soluble bags).	do	do	do
	90% wettable powder formulation in water soluble bags.	do	Unclassified	
	All granular formulations.	do	do	
	25% wettable powder formulations.	do	do	
	In 1.24% to 2.5% dusts as sole active ingredient and in mixtures with fungicides and chlorinated hydrocarbon, inorganic phosphate and biological insecticides.	do	do	
Methylbromide	All formulations in containers greater than 1.5 lb.	All uses.	Restricted	Other hazards-accident history.
	Containers with not more than 1.5 lb of methyl bromide with 0.25% to chloropicrin as an indicator.	Single applications (nondomestic use) for soil treatment in closed systems.	Unclassified	
	Containers with not more than 1.5 lb having no indicator.	All uses.	Restricted	do
*do means same as above.				

(continued)

## Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Methyl parathion	All dust and granular formulations less than 5%.	do	do	Other hazards-accident history. All foliar applications restricted based on residue effects on mammalian and avian species.
	Microencapsulated. All dust and granular formulations 5% and greater and all wettable powders and liquids.	do	do	Residue effects on avian species. Hazard to bees. Acute dermal toxicity. Residue effects on mammalian and avian species.
Mevinphos	All emulsifiable concentrates and liquid concentrates.	do	do	do
	Psycodid filter fly liquid formulations.	do	do	Acute dermal toxicity.
	2% dusts.	do	do	Residue effects on mammalian and avian species.
Monocrotophos	Liquid formulations 19% and greater.	do	do	Residue effects on avian species. Residue effects on mammalian species.
	Liquid formulations 55% and greater.	do	do	Acute dermal toxicity. Residue effects on avian species. Residue effects on mammalian species.
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Nicotine (alkaloid)	Liquid and dry formulations 14% and above.	Indoor (green-house)	Restricted	Acute inhalation toxicity.
	All formulations.	Applications to cranberries	Restricted	Effects on aquatic organisms.
	Liquid and dry formulations 1.5% and less.	All uses (domestic and nondomestic).	Unclassified	
Paraquat (dichloride) and paraquat bis(methylsulfate)	All formulations and concentrations except those listed below.	All uses.	Restricted	Other hazards. Use and accident history, human toxicological data.
	Pressurized spray formulations containing 0.44% Paraquat bis(methyl sulfate) and 15% petroleum distillates as active ingredients.	Spot weed and grass control.	do	
	Liquid fertilizers containing concentrations of 0.025% paraquat dichloride and 0.03% atrazine; 0.03% paraquat dichloride and 0.37% atrazine, 0.04% paraquat dichloride and 0.49% atrazine.	All uses.	Unclassified	
Phorate	Liquid formulations 65% and greater.	do	Restricted	Acute dermal toxicity. Residue effects on avian species (applies to foliar applications only). Residue effects on mammalian species (applies to foliar application only).
	All granular formulations.	Rice	Restricted	Effects on aquatic organisms.
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Phosacetim	Baits 0.1% and greater.	All uses.	Restricted	Hazard to nontarget species. Residues effects on mammalian species. Residue effects on avian species.
Phosphamidon	Liquid formulations 75% and greater.	do	do	Acute dermal toxicity. Residue effects on mammalian species. Residue effects on avian species.
	Dust formulations 1.5% and greater.	do	do	Residue effects on mammalian species.
Picloram	All formulations and concentrations except tordon 101R.	do	do	Hazard to nontarget organisms (specifically nontarget plants both crop and non-crop).
	Tordon 101 R forestry herbicide containing 5.4% picloram and 20.9% 2, 4-D.	Control of unwanted trees by cut surface treatment.	Unclassified	
Sodium cyanide <sup>3</sup>	All capsules and ball formulations.	All uses.	Restricted	Inhalation hazard to humans.
Sodiumfluoroacetate	All solutions and dry baits.	do	do	Acute oral toxicity. Hazard to nontarget organisms. Use and accident history.
*do means same as above.				

(continued)

# Appendix 5-1 (continued)

Active Ingredient	Formulation	Use Pattern	Classification <sup>1</sup>	Criteria Influencing Restriction
Strychnine	All dry baits pellets and powder formulations greater than 0.5%.	do	do	Acute oral toxicity. Hazard to nontarget avian species. Use and accident history.
	All dry baits pellets and powder formulations.	All uses calling for burrow builders.	do	Hazard to nontarget organisms.
	All dry baits, and pellets, and powder formulations 0.5% and below.	All uses except subsoil.	do	do
	do	All subsoil uses.	Unclassified	do
Sulfotepp	Sprays and smoke generators.	All uses.	Restricted	Inhalation hazard to humans.
Tepp	Emulsifiable concentrate formulations.	do	do	Inhalation hazard to humans. Dermal hazard to humans. Residue effects on mammalian and avian species.
Zinc Phosphide	All formulations 2% and less.	All domestic uses and nondomestic uses in and around buildings.	Unclassified	
	All dry formulations 60% and greater.	All uses.	Restricted	Acute inhalation toxicity.
	All bait formulations.	Nondomestic outdoor uses (other than around buildings).	Restricted	Hazard to nontarget organisms.
	All dry formulation 10% and greater.	Domestic uses.	Restricted	Acute oral toxicity.
*do means same as above.				

(continued)





<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>PESTICIDE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> <b>NA   C   RMA</b>	<b>REVIEWER COMMENTS:</b>		

**SECTION 6**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**

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## SECTION 6

### PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT

#### A. Applicability

This section applies to FWS facilities which store, transport, dispose of, or utilize petroleum based fuels, oils, or lubricants (POL). The section presents review action items that respond to regulations, procedures, and organizational mechanisms designed to prevent or limit the accidental release of POL materials to surface water, groundwater, or soils. Procedures designed to review the control of volatile organic compounds (VOCs) from POL sources are addressed in Section 1, Air Emissions Management.

This section covers POL management of bulk storage tanks, organizational tanks, pipeline delivery systems, truck fill stands, and immediate operating storage areas. POL materials addressed include petroleum, diesel fuel, and lubricating oils. The storage of POL materials in underground storage tanks (USTs) is addressed in Section 9, Underground Storage Tank (UST) Management.

#### B. Federal Legislation

- *The Water Quality Improvement Act of 1974.* This law was the primary Federal law governing the discharge of oil into navigable waters. This regulation prohibits the discharge of harmful quantities of oil into navigable waters. 40 Code of Federal Regulations (CFR) 110, *Protection of Environment - Discharge of Oil*, defines harmful quantities as those discharges which will cause a sheen or discoloration of the surface of the water or a sludge or emulsion to be deposited beneath the surface of the water.
- *The Federal Water Pollution Control Act.* This Act, commonly known as the *Clean Water Act* (CWA), as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the Act is to restore and maintain the chemical, physical and biological integrity of the nation's waters. Federal agencies are required to comply with all Federal, state, interstate, and local water pollution control requirements both substantively and procedurally (33 USC 1323(a)).
- *The Oil Pollution Act (OPA) of 1990.* This law, Public Law (PL) 301-308 (33 USC 2701-2761, et. al.) as amended, requires the prevention of oil pollution into navigable waters by tank vessels.
- *The Resource Conservation and Recovery Act (RCRA), Subtitle C.* This law, PL 98-616 (USC 6921-6939b) establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. Specifically, RCRA prohibits the placement of bulk or noncontainerized liquid hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the land disposal of specified wastes and disposal of hazardous waste through underground injection within 1/4 mi [0.40 km] of an underground source of drinking water.

- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

### **C. State/Local Regulations**

Many states and some major metropolitan and regional planning agencies have developed legislation and implemented regulations which closely parallel the Federal regulations. Some, however, may differ in important ways, and the evaluator should obtain copies of the state or local requirements for the Oil and Hazardous Substances Pollution Contingency (OHSPC) plan and the Spill Prevention, Control, and Countermeasures (SPCC) plan, where appropriate, and review them for those differences before conducting the evaluations. In particular, the evaluator should check for differences in the definitions of reportable quantities and the specific procedures for reporting spills that may exist in state/local regulations.

### **D. Key Compliance Requirements**

- SPCC Plans - Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC plan, unless certain criteria are met. The SPCC plan is required to contain general information about the facility, name and title of the designated coordinator, and an inventory of all storage, handling, and transfer facilities. Each SPCC plan must be reviewed at least once every 3 yr, unless it is an exempted facility. The SPCC plan must be reviewed and/or amended when there is a material change in facility design, construction, operation, or maintenance that alters potential for an oil spill. Each SPCC plan and any amendments must be certified by a professional engineer and the plan and each amendment must be prepared according to sound engineering practices. A copy of the SPCC plan is required to be available at sites that are normally attended at least 8 h/day where there is a potential for a discharge. All facility personnel involved with the management and handling of oil must receive training (40 CFR 112.3, 112.5, and 112.7(e)(10)).
- Discharges/Spills - A discharge of oil into navigable waters of the United States, or adjoining shorelines, or into areas that may affect natural resources belonging to or under the exclusive management authority of the United States must be reported to the National Response Center (NRC). Facilities are not allowed to add dispersants or emulsifiers to oils that are discharged (40 CFR 110.2 through 110.10).
- Discharge Prevention/Cleanup - Facilities are required to have appropriate containment and/or diversionary structures and cleanup equipment readily available to prevent discharged petroleum products from reaching navigable water courses (40 CFR 112.7(c)).
- Aboveground Storage Tanks (ASTs) - All bulk storage tanks are required to be provided with a secondary means of containment for the entire contents of the largest single tank,

plus sufficient freeboard to allow for precipitation. ASTs are required to undergo periodic integrity testing with a written log kept of this testing. Drainage of rainwater from diked areas must be controlled by a valve that is closed when not in active use. Drainage water that is determined to contain petroleum products in harmful quantities must be treated before discharge to meet applicable water quality standards (40 CFR 112.7(e)(1) through 112.7(e)(2)).

- Piping Systems - Buried piping at facility transfer operations, pumping activities, and in-plant processing is required to have a protective wrapping and coating to be cathodically protected if soil conditions warrant (40 CFR 112.7(e)(3)(i) and 112.7(e)(3)(iv)).
- Onshore Oil Pipelines - Facilities with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm to the environment by discharging oil into navigable waters are required to prepare a response plan. Copies of the response plan are required to be submitted to the U.S. Environmental Protection Agency (USEPA) Research and Special Programs Administration (RSPA) for approval. Copies of the response plan are required to be kept at the operators headquarters, pump stations, and other places where response activities might be conducted. Training is required for the implementation of the response plan. The Response Plan is required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194).
- Service Stations - The storage of liquids at service stations, specifically Class I liquids, has to be done in containers that are secure and prevents the excess release of vapors (29 CFR 1910.106(g)).
- Used Oil - Although used oil has not been declared a hazardous waste at the Federal level, it does need to be stored and handled in a manner similar to hazardous waste.
- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **E. Key Compliance Definitions**

- *Automotive Service Station* - that portion of property where flammable or combustible liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles and shall include any facilities available for the sale and service of tires, batteries, and accessories, and for minor automotive maintenance work, major automotive repairs, painting; body and fender work are excluded (29 CFR 1910.106(a)(3)).
- *Container* - any portable device in which materials is stored, transported, treated, disposed of, or otherwise handled (40 CFR 279.1).
- *Contiguous Zone* - the entire zone established or to be established by the United States under article 24 of the Convention on the Territorial Sea and Contiguous Zone (40 CFR 110.1).

- ***Continuous Discharge*** - a discharge occurring without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 123.3).
- ***Daily Discharge*** - the discharge of a pollutant measured during a calendar day or any 24 h period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).
- ***Direct Discharge*** - the discharge of a pollutant (40 CFR 122.2).
- ***Discharge*** - when used in relation to Section 311 of the Act, includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping, but excludes (40 CFR 110.1):
  1. discharges in compliance with a permit
  2. discharges resulting from circumstances identified and reviewed and made a part of the public record with respect to an issued permit and subject to a condition in the permit
  3. continuous or anticipated intermittent discharges from a point source, identified in a permit application that are caused by events occurring within the scope of relevant operating or treatment systems.
- ***Do-It-Yourself (DIY) Used Oil Collection Center*** - any site or facility that accepts aggregates and stores used oil collected only from household DIYs (40 CFR 279.1).
- ***Environmentally Sensitive Area*** - an area of environmental importance which is in or adjacent to navigable waters (49 CFR 194.5).
- ***Existing Tank*** - a tank that is used for the storage or processing of used oil and that is in operation, or a tank for which installation has commenced on, or prior to the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).
- ***Good Management Practice (GMP)*** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- ***Household "Do-It-Yourself" Used Oil*** - oil that is derived from households, such as used oil generated by individuals who generate used oil through the maintenance of their personal vehicles (40 CFR 279.1).
- ***Navigable Waters*** - the waters of the United States, including the territorial seas. Navigable waters do not include prior converted cropland. The terms includes (40 CFR 100.2):
  1. all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide
  2. interstate waters, including interstate wetlands

3. all other waters such as intra-state lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
    - a. that are or could be used by interstate or foreign travelers for recreational or other purposes
    - b. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce
    - c. that are used or could be used for industrial purposes by industries in interstate commerce
  4. all impoundments of waters otherwise defined as navigable waters under this section
  5. tributaries of waters identified above, including adjacent wetlands
  6. wetlands adjacent to waters identified above.
- **New Tank** - a tank that will be used to store or process used oil and for which installation has started after the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).
  - **Offshore Facility** - any facility of any kind located in, on, or under any of the navigable waters of the United States, and any facility or any kind that is subject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel (40 CFR 110.2 and 33 CFR 153.103).
  - **Off-Specification Oil** - Used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits (40 CFR 279):

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	100 °F minimum
Total halogens	4000 ppm maximum

- **Oil** - when used in relation to Section 311 of the Act, means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil (40 CFR 110.2 and 33 CFR 153.103).
- **Onshore Facility** - any facility (including but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under any land within the United States, other than submerged land (40 CFR 110.2 and 33 CFR 153.103).
- **Onshore Oil Pipeline Facilities** - new and existing pipe, rights of way and any equipment, facility, or building used in the transportation of oil located in, on, or under, any land within the United States other than submerged land (49 CFR 194.5).

- **Operator** - in relationship to onshore oil pipeline facilities, a person who owns or operates onshore oil pipeline facilities (49 CFR 194.5).
- **Pipeline** - all parts of an onshore pipeline facility through which oil moves, including, but not limited to, line pipe, valves, and other appurtenances connected to the line pipe, pumping units, fabricated assemblies associated with pumping units, metering and delivery stations and fabricated assemblies therein, and breakout tanks (49 CFR 194.5).
- **Point Source** - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater (40 CFR 122.2 and 401.11(d)).
- **Processing** - means chemical or physical operations designed to produce from used oil, or to make used oil more amenable for production, fuel oils, lubricants, or other used oil-derived product. Processing includes, but is not limited to blending used oil with Virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation and re-refining (40 CFR 279.1).
- **Public Vessel** - a vessel owned or bare boat chartered and operated by the United States, or by a state or political subdivision thereof, or by a foreign nation, except when such vessel is engaged in commerce (40 CFR 110.2 and 33 CFR 153.103).
- **Qualified Individual** - an English-speaking representative of an operator, located in the United States, available on a 24-h basis, with full authority to: activate and contract with required oil spill removal organizations; activate personnel and equipment maintained by the operator; act as liaison with the On-Scene Coordinator (OSC); and obligate any funds required to carry out all required or directed oil response activities (49 CFR 194.5).
- **Re-refining Distillation Bottoms** - the heavy fractions produced by vacuum distillation of filtered and dehydrated used oil. The composition of still bottoms varies with column operation and feedback (40 CFR 279.1)
- **Response Activities** - the containment and removal of oil from the water and shorelines, the temporary storage and disposal of recovered oil, or the taking of other actions as necessary to minimize or mitigate damage to the environment (49 CFR 194.5).
- **Response Area** - the inland zone or coastal zone, as defined in the National Contingency Plan (NCP), in which response activity is occurring (49 CFR 194.5).
- **Response Plan** - the operator's core plan and the response zone appendices for responding, to the maximum extent practicable, to a worst case discharge of oil, or the substantial threat of such a discharge (49 CFR 194.5).
- **Response Zone** - a geographic area, either along a length of pipeline or including multiple pipelines, containing one or more adjacent line sections, for which the operator must plan for the deployment of, and provide, spill response capabilities (49 CFR 194.5).



- ***Sheen*** - an iridescent appearance on the surface of the water (40 CFR 110.2).
- ***Sludge*** - an aggregate of oil or oil and other matter of any kind in any form other than dredged spoil, having a combined specific gravity equivalent to or greater than water (40 CFR 110.2).
- ***Spill Event*** - a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities (40 CFR 112.3).
- ***Spill Prevention, Control, and Countermeasure (SPCC) Plan*** - the SPCC plan shall be a carefully thought-out plan prepared in accordance with good engineering practices, and which has the full approval of management at a level with authority to commit the necessary resources (40 CFR 112.3).
- ***Tank*** - any stationary device, designed to contain an accumulation of used oil, which is constructed primarily of nonearthen materials which provides structural support (40 CFR 279.1).
- ***Used Oil*** - any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities (40 CFR 279.1).
- ***Used Oil Aggregation Point*** - any site or facility that accepts, aggregates, and/or stores used oil collected only from other used oil generation sites owned or operated by the owner or operator of the aggregation point, from which used oil is transported to the aggregation point in shipments of no more than 55 gal [208.20 L]. Used oil aggregation points may also accept used oil from household DIYs (40 CFR 279.1).
- ***Used Oil Burner*** - a facility where used oil not meeting the specification requirements is burned for energy recovery (40 CFR 279.1).
- ***Used Oil Collection Center*** - any site or facility that is registered/licensed/ permitted/recognized by a state/county/municipal government to manage used oil and accepts/aggregates and stores used oil collected from used oil generators who bring used oil to the collection centers in shipments of no more than 55 gal [208.20 L]. Used oil collection centers may accept used oil from household DIYs (40 CFR 279.1).
- ***Used Oil Fuel Marketer*** - any person who conducts either of the following activities (40 CFR 279.1):
  1. directs a shipment of off-specification used oil from their facility to a used oil burner
  2. first claims that used oil that is to be burned for energy recovery meet used oil fuel specifications.
- ***Used Oil Generator*** - any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation (40 CFR 279.1).
- ***Used Oil Processor/Re-refiner*** - a facility that processes used oil (40 CFR 279.1).

- ***Used Oil Transfer Facility*** - any transportation related facility, including loading docks, parking areas, storage areas, and other areas where shipments of used oil are held for more than 24 h during the normal course of transportation and not longer than 35 days (40 CFR 279.2).
- ***Used Oil Transporter*** - any person who transports used oil, any persons who collects used oil from more than one generator and transports the collected oil, and owners and operators of used oil transfer facilities. Used oil transporters may consolidate or aggregate loads of used oil for purposes of transportation, but, with the following exception, may not process used oil. Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation (e.g., settling and water separation), but that are not designed to produce or make more amenable for production of used oil derived products or used oil fuel (40 CFR 279.1).
- ***Vessel*** - every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel (40 CFR 110.2).
- ***Wetlands*** - those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds (40 CFR 110.2).
- ***Worst Case Discharge*** - the largest foreseeable discharge of oil, including a discharge from fire or explosion, in adverse weather conditions (49 CFR 194.5).

## **PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**

### **GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
<b>All Facilities</b>	6-1 through 6-9	13
<b>Spill Plans</b>	6-10 through 6-18	17
<b>Discharges/Spills</b>	6-19 and 6-20	23
<b>Storage/Containment</b>	6-21 through 6-25	25
<b>Pipelines</b>	6-26 through 6-36	29
<b>Service Stations</b>	6-37 through 6-40	37
<b>Used Oil</b>		
General	6-41	41
Generators	6-42 through 6-49	41
Collection Centers and Aggregation Points	6-50 through 6-52	44
Transportation	6-53 through 6-61	45
Burners	6-62 through 6-68	48
Marketing	6-69 through 6-73	50
Dust Suppression	6-74	52



## **PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**

### **Records to Review**

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Official correspondence with state implementing agency
- Spill Prevention and Response Plan
- Facility response plan required by OPA
- Records of spill response training programs
- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)

### **Physical Features to Inspect**

- Refueling facilities, including:
  - Above and belowground storage tanks and dikes
  - Venting
  - Fill pipe
  - Gauges
- Washrack areas
- Vehicle maintenance areas
- Oil separators
- Oil and hazardous substance site
- Fire training pits
- Grease racks



**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL FACILITIES</b></p> <p><b>6-1.</b> Actions or changes since previous review of POL management should be examined (GMP).</p> <p><b>6-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on POL management should be available at the facility (GMP).</p> <p><b>6-3.</b> FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>Verify that copies of the following regulations are available and kept current:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards.</i></li> <li>- 33 CFR 154, <i>Facilities Transferring Oil or Hazardous Materials in Bulk.</i></li> <li>- 33 CFR 158, <i>Reception Facilities for Oil, noxious Liquid Substances, and Garbage.</i></li> <li>- 40 CFR 110, <i>Discharge of Oil.</i></li> <li>- 40 CFR 112, <i>Oil Pollution Prevention.</i></li> <li>- 40 CFR 266, <i>Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.</i></li> <li>- 40 CFR 279, <i>Standards for the Management of Used Oil.</i></li> <li>- 49 CFR 194, <i>Response Plans for Onshore Oil Pipelines.</i></li> <li>- 49 CFR 195, <i>Transportation of Hazardous Liquids by Pipeline.</i></li> <li>- Appropriate state and local regulations.</li> </ul> <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- spill management</li> <li>- handling of wastewater and fuel sludge from tank cleaning</li> <li>- use of product recovery systems</li> <li>- containment</li> <li>- used oil</li> <li>- ASTs.)</li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>6-4. Facilities will meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning POLs have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p>6-5. FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).</p>	<p>Determine if the facility has received an NOV relating to petroleum management.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>
<p>6-6. Facilities should have a plan for the management of reclaimed, recoverable and waste liquid petroleum products (GMP).</p>	<p>Verify that a Management of Recoverable and Waste Liquid Petroleum Products Plan has been prepared.</p>
<p>6-7. Petroleum products which are not utilized for their intended purpose should be reclaimed, recovered, and disposed of as waste (GMP).</p>	<p>Verify that containers are properly marked and in good condition at accumulation points.</p> <p>Verify that used crankcase oils/ lubricants are being collected at motor pools and vehicle maintenance shops.</p> <p>Determine if contaminated used crankcase oil is regulated as hazardous and disposed of according to applicable RCRA regulations.</p> <p>Verify that mixed petroleum liquids which are contaminated by halogenated contaminants or industrial chemicals are disposed of as hazardous waste according to applicable RCRA regulations.</p>



<b>COMPLIANCE CATEGORY:</b> <b>PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-8.</b> A survey of past actions and activities concerning petroleum products at the facility should be done and appropriate sampling and testing initiated to identify potentially contaminated sites (GMP).</p>	<p>Determine if the facility has had previous spills or actions occur that could lead to possible facility contamination.</p> <p>Verify that actions have been taken to ascertain the extent of contamination.</p>
<p><b>6-9.</b> FWS facilities should notify the Region and the SPCO of spills of petroleum products (GMP).</p>	<p>Determine if the facility has had any recent petroleum spills.</p> <p>Verify that the spills were reported to the Region and the SPCO.</p>



<b>COMPLIANCE CATEGORY:</b> <b>PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>SPILL PLANS</b>  <b>6-10.</b> Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC plan (40 CFR 112.3).	<p>Verify that the facility has an SPCC plan.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows:               <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met:               <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2)).</li> </ul> </li> </ul> <p>(NOTE: This applies to onshore and offshore facilities, including onshore and offshore mobile or portable facilities, such as onshore drilling or workover rigs, barge mounted offshore drilling or workover rigs, and portable fueling facilities.)</p>
<b>6-11.</b> The SPCC plan is required to contain specific information (40 CFR 112.7).	<p>Determine if the SPCC plan has been prepared and reviewed for the following:</p> <ul style="list-style-type: none"> <li>- Regional approval</li> <li>- spill reporting procedures</li> <li>- prespill planning for major potential spill areas</li> <li>- spill containment and cleanup equipment/facilities</li> <li>- oil spill contingency plan</li> <li>- training procedures</li> <li>- spill response exercises</li> <li>- plan review and update procedures.</li> </ul>

**COMPLIANCE CATEGORY:  
PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>6-11. (continued)</b>	<p>Verify that the SPCC plan contains:</p> <ul style="list-style-type: none"> <li>- general information about the facility including: <ul style="list-style-type: none"> <li>- name</li> <li>- type of function</li> <li>- location of facility drainage patterns</li> <li>- location maps</li> </ul> </li> <li>- name and title of designated coordinator</li> <li>- inventory of all storage, handling, and transfer facilities that could produce a significant spill. For each listing include: <ul style="list-style-type: none"> <li>- prediction of direction and rate of flow</li> <li>- total quantity of oil that could be spilled as a result of major failure.</li> </ul> </li> </ul> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112.1(d)(2) if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-12.</b> Each SPCC plan must be reviewed at least once every 3 yr (40 CFR 112.5(b)).</p>	<p>Verify that the SPCC plan has been reviewed at least once every 3 yr.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>
<p><b>6-13.</b> The SPCC plan must be reviewed and/or amended under specific circumstances (40 CFR 112.4 and 112.5 (a)).</p>	<p>Verify that the plan was amended if there was a material change in facility design, construction, operations, or maintenance that alters the potential for an oil spill.</p> <p>Verify that the plan was sent to the USEPA for review if the facility:</p> <ul style="list-style-type: none"> <li>- discharged oil of more than 1000 gal [3785.41 L] into navigable waters in a single spill even</li> <li>- discharged oil in harmful quantities into navigable waters in two reportable spill events within any 12 mo period.</li> </ul> <p>Verify that the plan was amended and recertified by a professional engineer.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-13. (continued)</b></p>	<p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>
<p><b>6-14. Each SPCC plan and any amendments must be certified by a professional engineer and the plan and each amendment must be prepared according to sound engineering practices (40 CFR 112.3(d) and 112.5(c)).</b></p>	<p>Verify that the SPCC plan has been certified.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>
<p><b>6-15. Each SPCC plan should be approved by the Region (GMP).</b></p>	<p>Verify that the plan has been approved by the Region.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-16.</b> A copy of the SPCC plan is required to be available at sites that are normally attended at least 8 h/day where there is a potential for a discharge (40 CFR 112.3 (e)).</p>	<p>Verify that a copy of the SPCC is available at facilities that have personnel onsite at least 8 h/day.</p> <p>(NOTE: If personnel is not onsite for 8 h/day, the plan may be kept at the nearest field office and the plan should be made available to the Regional Administrator.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-17.</b> All facility personnel involved with the management and handling of oil and hazardous substances must take part in periodic training in spill prevention and response (40 CFR 112.7(e)(10)).</p>	<p>Verify that proper training has been conducted by reviewing training records and interviewing the staff.</p> <p>Verify that training addresses the procedures to follow when a spill occurs, such as:</p> <ul style="list-style-type: none"> <li>- notification</li> <li>- containment</li> <li>- safety practices.</li> </ul> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>
<p><b>6-18.</b> As a good management practice, the SPCC plan should specify the conduct of periodic spill response exercises (GMP).</p>	<p>Review spill response exercise files for verification of compliance with stated frequency requirements.</p>



**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**DISCHARGES/SPILLS**

**6-19.** Discharges of oil into or upon the navigable waters of the United States or adjoining shorelines or into or upon the waters of the contiguous zone or into areas that may affect natural resources belonging to, or under the exclusive management authority of the United States must be reported (40 CFR 110.2 through 110.10).

**6-20.** Facilities are not allowed to add dispersants or emulsifiers to oils that are discharged (40 CFR 110.8).

Determine if the facility has had any discharges of oils.

(NOTE: Discharges of oil are defined as those which violate applicable water quality standards or cause a film or a sheen upon or discoloration of the surface of the water or adjoining shoreline or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shores.)

Verify that the NRC was notified as soon as possible after discovery of a discharge as defined in the above NOTE.

(NOTE: If direct reporting to the NRC is not practicable reports may be made to the Coast Guard or USEPA predesignated OSC.)

(NOTE: Discharges of oil from a properly functioning vessel engines are not considered harmful but discharges of oil from a vessel's bilge are not allowed.)

Verify that facilities do not add dispersants or emulsifiers to discharges.



**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**STORAGE/  
CONTAINMENT**

**6-21.** Appropriate containment and/or diversionary structures, and cleanup equipment to prevent discharged petroleum products from reaching navigable water course is required to be readily available at facility (40 CFR 112.7(c)).

**REVIEWER CHECKS:**

(NOTE: Water is of special concern during fueling of boats on the water and repair, maintenance, and replacement of powerhouse and water control structures.)

Determine that at onshore facilities one of the following prevention systems or an equivalent is used:

- absorbent material
- dikes, berms, or retaining walls sufficiently impervious to contain spilled oil
- curbing devices
- culverting gutters or other drainage systems
- weirs, booms, or other barriers
- spill diversion ponds
- retention ponds.

Verify that at offshore facilities (see definitions), one of the following, or an equivalent is available:

- curbing
- drip pans
- sumps
- collection systems.

Determine the following for spill equipment in each oil storage area:

- adequacy of material types and quantity
- accessibility of storage locations
- condition of equipment.

**COMPLIANCE CATEGORY:  
PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-21. (continued)</b></p>	<p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>
<p><b>6-22.</b> All bulk storage tanks (over 660 gal [2498.37 L]) are required to be provided with a secondary means of containment for the entire contents of the largest single tank plus sufficient free-board to allow for precipitation (40 CFR 112.7(e)(2)(ii)).</p>	<p>Verify that adequate containment is provided for bulk storage tanks in the storage area and at remote tanks.</p> <p>Verify that diked areas are impervious enough to contain spilled oil.</p> <p>(NOTE: Dikes, containment curbs, and pits are commonly employed for this purpose, but they may not always be appropriate. An alternative system could consist of a complete drainage trench enclosure arranged so that a spill could terminate and be safely contained in an in-plant catchbasin or holding pond.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>6-23. Drainage of rain-water from diked areas must be controlled by a valve which is closed when not in active use (40 CFR 112.7(e)(1) and 112.7(e)(2)(iii)).</p>	<p>Verify that valves are closed when not in use by inspecting drainage valves at diked areas.</p> <p>Verify that drainage valves are attended when opened to drain diked/bermed area by interviewing personnel.</p> <p>Determine if operating personnel understand the meaning of a harmful discharge as described in 40 CFR 110.6.</p> <p>Inspect records for any drainage water which was inspected to determine if it would represent a harmful discharge.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if 40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:  
PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-24.</b> Drainage water which is determined to contain petroleum products in harmful quantities must be treated prior to discharge to meet applicable water quality standards (40 CFR 112.7(e)(2)).</p>	<p>Determine if discharges containing harmful quantities of petroleum products were properly treated, recovered, or disposed and reported by interviewing onsite personnel.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if 40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>
<p><b>6-25.</b> ASTs are required to undergo periodic integrity testing (40 CFR 112.7(e)(2)(vi)).</p>	<p>Verify that periodic leak tests have been conducted (a decrease in converted fuel volume equal to or greater than 1/4 in. [0.64 cm] constitutes a suspected leak) and check the results of these tests.</p> <p>Determine if leaking tanks have been repaired or replaced.</p> <p>(NOTE: Periodic testing should take tank design into account and involve such techniques as hydrostatic testing, visual inspection, or a system of non-destructive shell thickness testing.)</p> <p>Verify that a written log of integrity testing has been maintained.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PIPELINES</b></p> <p><b>6-26.</b> Buried piping at a transfer facility, pumping station, or in-plant processing facility is required to have a protective wrapping and coating and is required to be cathodically protected if soil conditions warrant (40 CFR 112.7(e)(3)(i)).</p>	<p>Verify that buried fuel piping is properly protected from corrosion by examining records and interviewing personnel.</p> <p>Verify that methods are appropriate and correctly applied if cathodic protection is used.</p> <p>Verify that detected leaks and failures are being reported.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:  
PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-27.</b> All above and belowground fuel piping systems at transfer facilities, pumping stations, and in-plant processing facilities must be regularly examined and any suspected leaks investigated immediately (40 CFR 112.7(e)(3)(iv)).</p>	<p>Verify that regular inspections have been conducted by examining records and interviewing personnel.</p> <p>Verify that aboveground general condition of items, such as flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces have been assessed.</p> <p>Verify that confirmed leaks have been reported and leaking pipes repaired or replaced.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the DOT</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [15,987.30 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>
<p><b>6-28.</b> Offsite pipelines should be inspected regularly (GMP).</p>	<p>Determine if inspections are performed by examining records.</p> <p>Verify that detected leaks and failures have been reported and leaking pipes repaired or replaced by interviewing personnel.</p>



**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-29.</b> In specific instances of failure in a pipeline for hazardous liquids, a report must be submitted (49 CFR 195.1, 195.50, and 195.54).</p>	<p>Verify that when there is a release of hazardous liquid or CO<sub>2</sub> that results in the following, an accident report is submitted to Department of Transportation (DOT) within 30 days:</p> <ul style="list-style-type: none"> <li>- explosion or fire not intentionally set by the operator</li> <li>- loss of 50 or more barrels (bbl) [7949.37 L] of hazardous liquid or CO<sub>2</sub></li> <li>- escape to the atmosphere of more than 5 bbl [7944.94 L] a day of highly volatile liquids</li> <li>- death of any person</li> <li>- bodily harm resulting in: <ul style="list-style-type: none"> <li>- loss of consciousness</li> <li>- necessity to carry the person from the scene</li> <li>- necessity for medical treatment</li> <li>- disability which prevents the discharge of normal duties or pursuit of normal activities</li> </ul> </li> <li>- estimated property damage to the property of the operator or others or both, exceeding \$5000.</li> </ul> <p>(NOTE: This requirement does not apply to the transportation of:</p> <ul style="list-style-type: none"> <li>- a hazardous liquid that is transported in a gaseous state</li> <li>- a hazardous liquid through a pipeline by gravity</li> <li>- a hazardous liquid through pipelines that operate at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe</li> <li>- petroleum in onshore gathering lines in rural areas except gathering lines in the inlets of the Gulf of Mexico</li> <li>- a hazardous liquid or CO<sub>2</sub> in offshore pipelines which are located upstream from the outlet flange of each facility on the Outer Continental Shelf where hydrocarbons or CO<sub>2</sub> are produced or where produced hydrocarbons or CO<sub>2</sub> are first separated, dehydrated, or otherwise processed, whichever facility is further downstream</li> <li>- a hazardous liquid or CO<sub>2</sub> through onshore production, refining, or manufacturing facilities, storage or in plant piping systems associated with such facilities</li> <li>- a hazardous liquid or carbon dioxide by vessel, aircraft, tank truck, tank car, or other vehicle or terminal facilities used exclusively to transport hazardous liquids or CO<sub>2</sub> between such modes of transportation</li> <li>- CO<sub>2</sub> downstream from a point in the vicinity of the well site at which CO<sub>2</sub> is delivered to a production facility.)</li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-30.</b> Under specific circumstances, if there is a release of a hazardous liquid or CO<sub>2</sub> transported in a pipeline, telephone notification must be made as soon as possible after discovery of the release (49 CFR 195.1 and 195.52).</p>	<p>Verify that telephone notification is made as soon as possible of any failure that:</p> <ul style="list-style-type: none"> <li>- caused a death or a personal injury requiring hospitalization</li> <li>- resulted in either a fire or explosion not intentionally set by the operator</li> <li>- caused estimated damage to the property of the operator or other or both, exceeding \$5000</li> <li>- resulted in pollution of any stream, river, lake, reservoir, or other similar body of water that violated applicable water quality standards, caused a discoloration of the surface of the water or adjoining shoreline, or deposited a sludge or emulsion beneath the surface of the water or upon adjoining shoreline</li> <li>- is significant in the judgement of the operator even though it did not meet any of the above criteria.</li> </ul> <p>(NOTE: Telephone reports are to be made to 1-800-424-8802.)</p> <p>(NOTE: This requirement does not apply to: the transportation of:</p> <ul style="list-style-type: none"> <li>- a hazardous liquid that is transported in a gaseous state</li> <li>- a hazardous liquid through a pipeline by gravity</li> <li>- a hazardous liquid through pipelines that operate at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe</li> <li>- petroleum in onshore gathering lines in rural areas except gathering lines in the inlets of the Gulf of Mexico</li> <li>- a hazardous liquid or CO<sub>2</sub> in offshore pipelines which are located upstream from the outlet flange of each facility on the Outer Continental Shelf where hydrocarbons or CO<sub>2</sub> are produced or where produced hydrocarbons or CO<sub>2</sub> are first separated, dehydrated, or otherwise processed, whichever facility is further downstream</li> <li>- a hazardous liquid or CO<sub>2</sub> through onshore production, refining, or manufacturing facilities, storage or in plant piping systems associated with such facilities</li> <li>- a hazardous liquid or CO<sub>2</sub> by vessel, aircraft, tank truck, tank car or other vehicle or terminal facilities used exclusively to transport hazardous liquids or CO<sub>2</sub> between such modes of transportation</li> <li>- CO<sub>2</sub> downstream from a point in the vicinity of the well site at which CO<sub>2</sub> is delivered to a production facility.)</li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>6-31. Facilities with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm or significant and substantial harm to the environment by discharging oil into or on any navigable waters of the United States. or adjoining shorelines are required to prepare a response plan (49 CFR 194.3 and 194.101 through 194.107).</p>	<p>Verify that the response plan includes:</p> <ul style="list-style-type: none"> <li>- a statement indicating which sections in a response zone can be expected to cause significant and substantial harm to the environment if there is a discharge of oil into or on the navigable water or adjoining shorelines</li> <li>- indications of the worst case discharge</li> <li>- immediate notification procedures</li> <li>- spill detection and mitigation procedures</li> <li>- the name address and phone number of an oil spill response organization</li> <li>- response activities and response resources</li> <li>- training procedures</li> <li>- equipment testing</li> <li>- schedules for drills</li> <li>- plan updating procedures</li> <li>- an appendix for each response zone indicating all the above general information in a way that is tailored to that response zone.</li> </ul> <p>Verify that the response plan is in English and if necessary, any other language understood by personnel responsible for carrying out the plan.</p> <p>(NOTE: Significant and substantial harm can be expected if the line is greater than 6 5/8 in. [16.83 cm] in outside nominal diameter, greater than 10 mi [16.09 km] in length and the line section:</p> <ul style="list-style-type: none"> <li>- has experienced a release greater than 1000 bbl [158,987.3 L] in the previous 5 yr</li> <li>- has experienced two or more reportable releases in the previous 5 yr</li> <li>- contains any electric resistance welded pipe, manufactured prior to 1970, operated at maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe</li> <li>- is located within a 5 mi [8.05 km] radius of potentially affected public drinking water intakes and could reasonably be expected to reach the intake</li> <li>- is located within 1 mi [1.61 km] radius of potentially affected environmentally sensitive areas, and could reasonably be expected to reach these areas.)</li> </ul> <p>(NOTE: The requirement to submit a response plan is effective 18 February 1993. After 18 August 1993, the onshore pipeline must be operated according to the details outlined in the response plan.)</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-31. (continued)</b></p>	<p>(NOTE: A response plan is not required for the following facilities:</p> <ul style="list-style-type: none"> <li>- a pipeline that is 6 5/8 in. [16.83 cm] or less in outside nominal diameter and is 10 mi [16.09 km] or less in length, and all the following conditions apply: <ul style="list-style-type: none"> <li>- the pipeline has not experienced a release greater than 1000 bbl [158,987.3 L] within the previous 5 yr</li> <li>- the pipeline has not experienced at least two reportable releases within the previous 5 yr</li> <li>- the pipeline contains any electric resistance welded pipe, manufactured prior to 1970, does not operate at a maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe</li> <li>- the pipeline is not in proximity to navigable waters, public drinking water intakes, or environmentally sensitive areas</li> </ul> </li> <li>- a line section that is greater than 6 5/8 in. [16.83 cm] in outside nominal diameter and is greater than 10 mi [16.09 km] in length, where the operator determines that it is unlikely that the worst case discharges from any point on the line section would adversely affect, within 12 h after the start of discharge, any navigable waters, public drinking water intakes, or environmentally sensitive areas</li> <li>- a line section that is 6 5/8 in. [16.83 cm] or less in outside nominal diameter and is 10 mi [16.09 km] or less in length, where the operator determines that it is unlikely that the worst case discharge from any point on the line section would adversely affect, within 4 h after the initiation of the discharge, any navigable waters, public drinking water intakes, or environmentally sensitive areas.)</li> </ul>
<p><b>6-32.</b> Copies of the response plan are required to be submitted to the USEPA RSPA (49 CFR 194.119(a) through 194.119(d)).</p>	<p>Verify that two copies were submitted to the following address:</p> <p style="padding-left: 40px;">Pipelines Response Plans Office  Research and Special Programs Administration  Department of Transportation  400 Seventh St. SW  Washington D.C. 20590-0001.</p> <p>Verify that the RSPA approved the response plan.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-33.</b> If RSPA does not approve a response plan for a pipeline identified as expected to cause significant and substantial harm to the environment, the operator must submit certification to the RSPA by 18 July 1993 that the operator has obtained, through contract or other means, the necessary personnel and equipment to respond to a worst case discharge or a substantial threat of a discharge (49 CFR 194.119(e)).</p>	<p>Determine if the facility has an approved response plan.</p> <p>Verify that, if there is not an approved response plan, the necessary certification has been submitted.</p>
<p><b>6-34.</b> Copies of the response plan are required to be kept at specific locations (49 CFR 194.111).</p>	<p>Verify that a copy of the complete response plan is at the operators headquarters and a copy is provided to each responsible individual.</p> <p>Verify that a copy of the core portion of the plan and relevant response zone appendices for each line section whose pressure may be affected by the operation of a particular pump station is provided at the pump station.</p> <p>Verify that a copy of the core portion of the plan and relevant response zone appendices is kept at locations where response activities might be conducted.</p>
<p><b>6-35.</b> Training is required for the implementation of the response plan (49 CFR 194.117).</p>	<p>Verify that training is conducted such that all personnel know:</p> <ul style="list-style-type: none"> <li>- their responsibilities under the plan</li> <li>- the names, addresses, and procedures for contacting the operator on a 24-h basis and an qualified individual.</li> </ul> <p>Verify that reporting personnel know:</p> <ul style="list-style-type: none"> <li>- the content of the information summary</li> <li>- the toll free number of the NRC</li> <li>- the notification process.</li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**6-35. (continued)**

Verify that personnel engaged in response activities know:

- the characteristics and hazards of oil discharged
- the conditions that are likely to worsen emergencies and appropriate corrective actions
- the steps needed to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity, or environmental damage
- the proper firefighting procedures and use of equipment, fire suits and breathing apparatus.

Verify that training records exist for each individual that has been trained, specifically records for:

- operator personnel are at the operators headquarters
- personnel engaged in response are maintained as determined by the operator.

(NOTE: This training does not take the place of emergency response training requirements as found in 29 CFR 1910.120.)

**6-36.** Pipeline response plans are required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194.121).

Verify that the plan is reviewed every 3 yr.

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SERVICE STATIONS</b></p> <p><b>6-37.</b> Liquids at service stations are required to be stored in approved closed containers not exceeding 60 gal [227.12 L] capacity, in tanks underground, tanks in special enclosures, or in above-ground tanks that meet specific requirements (29 CFR 1910.106(g)(1)(i)(a) through 1910.106(g)(1)(i)(e), 1910.106(g)(1)(ii), and 1910.106(g)(1)(iii),</p>	<p>Verify that, if aboveground tanks are located in an adjoining bulk plant, they are connected by piping to service station underground tanks if, in addition to valves at the aboveground tank, there is a valve installed within the control of service station personnel.</p> <p>Verify that apparatus for dispensing Class I liquids into the fuel tanks of motor vehicles of the public is not located at a bulk plant unless it is separated by a fence or similar barrier from the area in which bulk operations occur.</p> <p>(NOTE: These requirements do not prohibit the dispensing of flammable liquids in the open from a tank vehicle to a motor vehicle if:</p> <ul style="list-style-type: none"> <li>- the tank vehicle complies with the requirements in <i>Standard on Tank Vehicles for Flammable Liquids</i>, National Fire Protection Association (NFPA) 385-1966</li> <li>- the dispensing is done on premises not open to the public</li> <li>- the dispensing hose does not exceed 50 ft [15.24 m]</li> <li>- the dispensing nozzle is a listed automatic closing type without a latchopen device.</li> </ul> <p>Verify that underground tanks are installed as required by the chapter titled UST Management.</p> <p>Verify that, if tanks for flammable or combustible liquids are installed in enclosures because it is impractical due to property or building limitations to correctly install USTs, the enclosure meets the following:</p> <ul style="list-style-type: none"> <li>- it is substantially liquid and vapor tight without backfill</li> <li>- sides, top, and bottom of the enclosure are of reinforced concrete at least 6 in. [15.24 cm] thick</li> <li>- openings for inspection are only on the top</li> <li>- tank connections are piped or closed so that neither vapors or liquid can escape into the enclosed space</li> <li>- means are provided so that portable equipment can be used to discharge to the outside any liquid or vapors that might accumulate if leakage occurs.</li> </ul> <p>Verify that no Class I liquids are stored within any service station building in closed containers of aggregate capacity exceeding 60 gal [227.12 L] unless the container meets the enclosure requirements.</p> <p>Verify that Class II and III liquids are not stored or dispensed inside service station buildings from tanks of more than 120 gal [454.25 L] capacity each.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-38.</b> Class I liquids at service stations are required to not be stored or handled within a building having a basement or pit into which flammable vapors can travel (29 CFR 1910.106(g)(1)(i)(f)).</p>	<p>Verify that Class I liquids are not stored or handled in a building with a basement or pit into which flammable vapors can travel unless the area is provided with adequate ventilation.</p>
<p><b>6-39.</b> Dispensing of Class I liquids into portable containers is restricted (29 CFR 1910.106(g)(1)(v)).</p>	<p>Verify that Class I liquids are not dispensed into portable containers unless the container is constructed of metal, has a tight closure with screwed or spring cover, and is fitted with a spout or designed to prevent spilling.</p>
<p><b>6-40.</b> Dispensing devices at automotive service stations are required to meet specific standards (29 CFR 1910.106(g)(3)).</p>	<p>Verify that dispensing systems are located so that all parts of the vehicle being served are located on the premises of the station.</p> <p>Verify that, if the dispensing unit is located inside a building, the following are met:</p> <ul style="list-style-type: none"> <li>- the dispensing area is separated from other areas</li> <li>- the unit and its piping are mounted wither on a concrete island or protected against collision damage</li> <li>- the area has an approved mechanical or gravity ventilation system.</li> </ul> <p>(NOTE: When indoor dispensing units are below grade, only approved mechanical ventilation can be used.)</p> <p>Verify that all dispensing units are equipped with a clearly identified and easily accessible switch or circuit breaker at a location remote from the dispensing devices to shut off power in case of an emergency.</p> <p>Verify that Class I liquids are transferred from tanks by means of a fixed pump that is designed and operated to prevent leakage or accidental discharge.</p> <p>Verify that Class I liquids are not dispensed by pressure from drums, barrels, or similar containers.</p> <p>Verify that all dispensing units, except those attached to a container, are mounted so as to prevent damage from a collision.</p>



**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**6-40. (continued)**

Verify that the nozzles on Class I dispensing units are listed manual or automatic closing type hose nozzles.



**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>USED OIL</b></p> <p><b>General</b></p> <p><b>6-41.</b> Depending on the constituents of the used oil, (see Appendix 6-1), facilities are required to handle used oil as a hazardous waste or according to specific used oil requirements (40 CFR 279.10).</p> <p><b>Generators</b></p> <p><b>6-42.</b> Containers and tanks used to store used oil at used oil generators must be in good condition and not leaking (40 CFR 279.22(b)).</p>	<p>Determine which types of the used oils listed in Appendix 6-1 are generated at the facility.</p> <p>Verify that used oil is handled according to its classification as one of the following:</p> <ul style="list-style-type: none"> <li>- a hazardous waste</li> <li>- used oil that falls under the requirements of 40 CFR 279 (see checklist items 6-42 through 6-74)</li> <li>- used oil that is not subject to the requirements of 40 CFR 279 and neither is it a hazardous waste unless testing indicates it does contain hazardous constituents.</li> </ul> <p>(NOTE: The requirements for used oil generators do not apply to the following:</p> <ul style="list-style-type: none"> <li>- household DIY used oil generators</li> <li>- vessels at sea or at port (in these cases generation occurs when it is transported ashore)</li> <li>- mixtures of used oil and diesel fuel mixed by the generators for use in the generators own vehicles</li> <li>- farmers who generate an average of 25 gal/mo [94.64 L/mo] or less of used oil from vehicles or machinery used on the farm in a calendar year.)</li> </ul> <p>(NOTE: In relation to used oil coming ashore from vessels, the owner or operator of the vessel and the person removing or accepting used oil from the vessel are co-generators of the used oil and are both responsible for managing the waste as used oil once it is ashore.)</p> <p>Verify that containers and tanks are not leaking, bulging, rusting, damaged, or dented.</p> <p>Verify that used oil is transferred to a new container or managed in another appropriate manner when necessary.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-43.</b> Containers of used oil at used oil generators should be managed in accordance with good management practices (GMP).</p>	<p>Inspect containers and storage areas to determine the following:</p> <ul style="list-style-type: none"> <li>- containers are not stored more than two high and have pallets between them</li> <li>- at least 3 ft of aisle space is provided between rows of containers.</li> </ul>
<p><b>6-44.</b> Containers and ASTs used for storage and fill pipes for transferring used oil into USTs are required to be marked or labeled USED OIL (40 CFR 279.22(c)).</p>	<p>Verify that containers and ASTs and fill pipes for USTs are labeled or marked USED OIL.</p> <p>(NOTE: USTS used to store used oil are required to meet the standards outlined in 40 CFR 280.)</p>
<p><b>6-45.</b> Used oil generators that detect a release (other than a UST release) after the effective date of the authorized used oil program for the state in which the release is located must meet specific requirements (40 CFR 279.22(d)).</p>	<p>Verify that when a release is detected the following is done:</p> <ul style="list-style-type: none"> <li>- the release is stopped</li> <li>- the released used oil is contained</li> <li>- the released used oil is cleaned up and properly managed</li> <li>- any leaking used oil storage containers or tanks are repaired or replaced prior to returning them to service.</li> </ul>
<p><b>6-46.</b> Generators are allowed to burn used oil in used oil-fired space heaters if specific parameters are met (40 CFR 279.23).</p>	<p>Determine if the facility operates any used oil-fired space heaters.</p> <p>Verify that the following parameters are met:</p> <ul style="list-style-type: none"> <li>- the heater burns only used oil that the facility generates or used oil received from household DIY used oil generators</li> <li>- the heater is designed to have a maximum capacity of not more than 0.5 MBtu/h [0.15 W/h]</li> <li>- the combustion gases from the heater are vented to the ambient air.</li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-47.</b> Except in specific circumstances, used oil generators must ensure that their used oil is transported only by transporters who have a USEPA identification number (40 CFR 279.24).</p>	<p>Determine if the facility is transporting used oil or contracting the transportation of used oil.</p> <p>Verify that the transporter has a USEPA identification number except when:</p> <ul style="list-style-type: none"> <li>- the generator does not transport more than 55 gal [208.20 L] at any time, the vehicle used is owned by the generator or an employee of the generator, and the used oil is going to a used oil collection center that is permitted</li> <li>- the generator is transporting the used oil to an aggregation point owned and/or operated by the same generator in a vehicle owned by the generator or an employee and no more than 55 gal [208.20 L] is transported</li> <li>- the used oil is reclaimed under a contractual agreement and the reclaimed oil is returned to the generator for use as lubricant, cutting oil, or coolant and the contract (or tolling agreement) contains the following: <ul style="list-style-type: none"> <li>- the type of used oil and frequency of shipments</li> <li>- verification that the vehicle used for transportation is owned by the used oil processor/refiner</li> <li>- verification that reclaimed oil will be returned to the generator.</li> </ul> </li> </ul>
<p><b>6-48.</b> Used oil generators should have documentation concerning the disposal of their used oil (GMP).</p>	<p>Verify that regardless of whether the facility sends its used oil to an aggregation center, a recycler, a burner, or elsewhere, it has documentation of the amounts sent and the date.</p>
<p><b>6-49.</b> Used oil generators are not allowed to mix hazardous waste with used oil unless specific parameters are met (40 CFR 279.21(a)).</p>	<p>Verify that the facility does not mix hazardous waste with used oil unless:</p> <ul style="list-style-type: none"> <li>- the resulting mixture does not exhibit any characteristics of hazardous waste</li> <li>- the waste is hazardous solely because it exhibits the characteristic of ignitability and is not a listed hazardous waste.</li> </ul>

**COMPLIANCE CATEGORY:  
PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Collection Centers and Aggregation Points</b></p> <p><b>6-50.</b> DIY used oil collection centers are required to meet the same standards as used oil generators (40 CFR 279.30).</p> <p><b>6-51.</b> Used oil collection centers are required to be licensed/ permitted and operated according to specific standards (40 CFR 279.31).</p> <p><b>6-52.</b> Used oil aggregation points are required to be operated according to the standards for used oil generators (40 CFR 279.32).</p>	<p>Verify that DIY used oil collection centers meet the requirements outlined in the sections titled USED OIL - Generators.</p> <p>Determine if the facility operates a used oil collection center.</p> <p>Verify that the collection center meets the requirements for used oil generators outlined in the sections titled USED OIL - Generators.</p> <p>Verify that the collection center is registered/licensed/permitted/ recognized by a state/county/ municipal government to manage used oil.</p> <p>Verify that the used oil aggregation point is operated according to the standards outlined in the sections titled USED OIL - Generators.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Transportation</b></p> <p><b>6-53.</b> Transporters who put used oil in a truck that has previously transported hazardous waste without emptying and cleaning the truck are required to transport and handle the used oil as a hazardous waste (40 CFR 279.40(b) through 279.40(c)).</p> <p><b>6-54.</b> Used oil transporters can consolidate or aggregate loads of used oil (40 CFR 279.41).</p> <p><b>6-55.</b> Used oil transporters are required to have a USEPA identification number (40 CFR 279.42).</p>	<p>(NOTE: These requirements concerning transportation and transfer of used oil do not apply to the following:</p> <ul style="list-style-type: none"> <li>- onsite transportation</li> <li>- generators who transport shipments of used oil totaling 55 gal [208.20 L] or less from the generator to a used oil collection center</li> <li>- generators who transport shipments of used oil totaling 55 gal [208.20 L] or less from the generator to a used oil aggregation point owned by the generator</li> <li>- transportation of used oil generated by household DIYs from the initial generator to a regulated generator, collection center, aggregation point, processor/refiner, or burner.)</li> </ul> <p>Verify that used oil that is contaminated with hazardous waste is transported as a hazardous waste according to the standards in the Hazardous Waste Management section.</p> <p>(NOTE: Facilities that transport used oil imported from abroad or exported outside of the United States must meet these requirements while in the boundaries of the United States.)</p> <p>Verify that transporters conduct only incidental processing operations such as settling and water separation unless they also comply with the requirements for processors and refiners.</p> <p>Verify that, if the facility is transporting used oil, it has a USEPA identification number.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-56.</b> Transporters must meet specific requirements for deliveries and shipments of used oil (40 CFR 279.43(a) through 279.43(b)).</p> <p><b>6-57.</b> Transporters are required to take specific actions if there is a discharge of used oil during transportation (40 CFR 279.43(c)).</p> <p><b>6-58.</b> Transporters are required to determine if the total halogen content of used oil being transported or stored at a transfer facility is above or below 1000 ppm (40 CFR 279.44).</p> <p><b>6-59.</b> Used oil transporters are required to keep records for used oil shipments and deliveries (40 CFR 279.46).</p>	<p>Verify that all used oil is delivered to:</p> <ul style="list-style-type: none"> <li>- another used oil transporter if the transporter has a USEPA identification number</li> <li>- a used oil processing/re-refining facilities with a USEPA identification number</li> <li>- an off-specification used oil burner facility with a USEPA identification number</li> <li>- an on-specification used oil burner facility.</li> </ul> <p>Verify that DOT labeling, packaging, and placarding requirements are met.</p> <p>Verify that, if there is a discharge, the following are done:</p> <ul style="list-style-type: none"> <li>- notification of authorities (NRC)</li> <li>- containment of the discharge</li> <li>- submit a written report to the DOT</li> <li>- cleanup.</li> </ul> <p>Verify that the transporter determines the total halogen content of the used oil by one of the following methods:</p> <ul style="list-style-type: none"> <li>- testing the used oil</li> <li>- applying knowledge of halogen content of the used oil in light of the materials or processes used.</li> </ul> <p>Verify that records of analyses are kept for 3 yr.</p> <p>Verify that the following records are kept for each shipment accepted for transport:</p> <ul style="list-style-type: none"> <li>- name and address of the generator, transporter, or processor/re-refiner who provided the used oil for transport</li> <li>- USEPA identification number</li> <li>- the quantity of oil accepted</li> <li>- the day of acceptance</li> <li>- signature of receipt.</li> </ul>



<b>COMPLIANCE CATEGORY:</b> <b>PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>6-59. (continued)</b>	<p>Verify that the following records are kept for each delivery to another used oil transporter or to a used oil burner, processor/re-refiner, or disposal facility and for export/import activities:</p> <ul style="list-style-type: none"> <li>- the name and address of the receiving facility or transporter</li> <li>- the USEPA identification number of the receiving facility or transporter</li> <li>- the quantity of used oil delivered</li> <li>- the date of delivery</li> <li>- the signature, dated upon receipt of the used oil, of a representative of the receiving facility or transporter.</li> </ul> <p>Verify that records are maintained for 3 yr.</p>
<b>6-60.</b> Transfer facilities are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.45 (b) through 279.45(g)).	<p>Verify that the tanks and containers at transfer facilities meet the requirements outlined in the section USED OIL - Generators.</p> <p>Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements:</p> <ul style="list-style-type: none"> <li>- dikes, berms, or retaining walls</li> <li>- a floor that covers the entire area within the dikes, berms, or retaining walls</li> <li>- the system is impervious.</li> </ul> <p>Verify that containers and aboveground tanks are labeled with the phrase USED OIL.</p> <p>Verify that fill pipes used to transfer used oil into underground storage tanks at transfer facilities are labeled USED OIL.</p>
<b>6-61.</b> Specific steps must be followed in response to a release at a transfer facility (40 CFR 279.45(h)).	<p>Verify that the following steps are taken:</p> <ul style="list-style-type: none"> <li>- the release is stopped</li> <li>- the release is contained</li> <li>- the release is cleaned up and properly managed</li> <li>- necessary repairs and replacements are done.</li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>Burners</b></p> <p><b>6-62.</b> Off-specification used oil fuel may be burned for energy recovery in industrial furnaces and boilers (40 CFR 279.12(c), 279.60(a), and 279.61(a)).</p> <p><b>6-63.</b> Used oil burners are required to have a USEPA identification number (40 CFR 279.60(a) and 279.62).</p> <p><b>6-64.</b> Used oil burners are required to determine if used oil is a hazardous waste (40 CFR 279.60(a) and 279.63).</p>	<p>Determine if the facility burns used oil fuel for the purpose of energy recovery.</p> <p>Verify that off-specification used oil fuel is only burned for energy recovery in one of the following:</p> <ul style="list-style-type: none"> <li>- an industrial furnace</li> <li>- a boiler that is identified as one of the following: <ul style="list-style-type: none"> <li>- industrial boilers that are located on the site of a facility engaged in manufacturing process where substances are transformed into new products by mechanical or chemical processes</li> <li>- utility boilers used to produce electric power steam, heated or cooled air, or other gases or fluids for sale</li> <li>- used oil-fired space heaters</li> </ul> </li> <li>- hazardous waste incinerators.</li> </ul> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul> <p>Verify that the facility has a USEPA identification number.</p> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul> <p>Verify that the used oil is either tested or the used oil burner applies their knowledge of the halogen content of the used oil in light of the materials or processes used, or using information from another source.</p> <p>Verify that copies of analyses are maintained for 3 yr.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-65.</b> Used oil burners are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.60(a) and 279.64(a) through 279.64(f)).</p>	<p>Verify that the tanks and containers at used oil burners meet the requirements outlined in the section titled USED OIL - Generators.</p> <p>Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements:</p> <ul style="list-style-type: none"> <li>- dikes, berms, or retaining walls</li> <li>- a floor that covers the entire area within the dikes, berms, or retaining walls</li> <li>- the system is impervious.</li> </ul> <p>Verify that containers and aboveground tanks are labeled with the phrase USED OIL.</p> <p>Verify that fill pipes used to transfer used oil into underground storage tanks at used oil burners are labeled USED OIL.</p> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul>
<p><b>6-66.</b> Specific steps must be followed in response to a release at a used oil burner facility (40 CFR 279.60(a) and 279.64 (g)).</p>	<p>Verify that the following steps are taken:</p> <ul style="list-style-type: none"> <li>- the release is stopped</li> <li>- the release is contained</li> <li>- the release is cleaned up and properly managed</li> <li>- necessary repairs and replacements are done.</li> </ul> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul>
<p><b>6-67.</b> Used oil burners are required to keep a record of each used oil shipment accepted for burning (40 CFR 279.60(a) and 279.65).</p>	<p>Verify that some form of records are kept that documents the following:</p> <ul style="list-style-type: none"> <li>- the name and address of the transporter who delivered the used oil</li> <li>- the name and address of the generator or processor or re-refiner from whom the used oil was sent to the burner</li> <li>- the USEPA identification numbers of the transporter or, if applicable, the generator, processor/re-refiner</li> <li>- the quantity of used oil accepted</li> <li>- the date of acceptance.</li> </ul> <p>Verify that records are maintained for at least 3 yr.</p>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-67. (continued)</b></p> <p><b>6-68.</b> Before a burner can accept the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner must provide a one-time written notice (40 CFR 279.60(a) and 279.66).</p> <p><b>Marketing</b></p> <p><b>6-69.</b> Used oil fuel marketers may only initiate a shipment of off-specification used oil to a used oil burner who has a USEPA identification number and burns the used oil in an industrial furnace or boiler (40 CFR 279.70(b) and 279.71).</p> <p><b>6-70.</b> Generators, transporters, processor/re-refiners, or burners must determine if the fuel oil is off or on-specification (40 CFR 279.70(b) and 279.72).</p>	<p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul> <p>Verify that the burner issued a notice to the USEPA stating the location and description of the activity and certifying that the used oil will only be burned in an industrial furnace or boiler.</p> <p>Verify that the certification is maintained for 3 yr from the date of the last shipment received.</p> <p>(NOTE: The following are exempt from meeting these requirements:</p> <ul style="list-style-type: none"> <li>- the burning of used oil by a generator in an onsite space heater</li> <li>- the burning of used oil by a processor/re-refiner for purposes of processing.)</li> </ul> <p>Determine if the facility is marketing off-specification used fuel oil.</p> <p>Verify that it is going to an appropriate used oil burner.</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)</li> </ul> <p>Verify that a determination as to whether the used oil fuel is off or on-specification is made by analyses or obtaining copies of other analyses.</p> <p>Verify that records of analyses are maintained for 3 yr.</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)</li> </ul>

**COMPLIANCE CATEGORY:**  
**PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-71.</b> Used oil fuel marketers are required to have a USEPA identification number (40 CFR 279.70(b) and 279.73).</p> <p><b>6-72.</b> Any used oil marketer that directs a shipment of used oil to a burner is required to keep specific records (40 CFR 279.70(b) and 279.74).</p>	<p>Verify that the facility has a USEPA identification number.</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)</li> </ul> <p>Verify that records containing the following information are kept of each shipment of off-specification oil:</p> <ul style="list-style-type: none"> <li>- the name and address of the transporter who delivers the used oil to the burner</li> <li>- the name and address of the burner who will receive the used oil</li> <li>- the USEPA identification number of the burner</li> <li>- the quantity of used oil shipped</li> <li>- the date of shipment.</li> </ul> <p>Verify that records containing the following information are kept of each shipment of on-specification oil:</p> <ul style="list-style-type: none"> <li>- the name and address of the facility receiving the shipment</li> <li>- the quantity of used oil delivered</li> <li>- a cross-reference to the record of used oil analysis</li> <li>- the date of shipment.</li> </ul> <p>Verify that records are maintained for 3 yr.</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> <li>- persons who direct shipments of on-specification used oil and who are not the first person to claim the oil is on-specification</li> <li>- used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner.)</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>PETROLEUM, OIL, AND LUBRICANT (POL) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>6-73.</b> Before a used oil generator, transporter, or processor/re-refiner directs the first shipment of off-specification used oil to a burner, they must obtain a one-time written and signed notice from the burner (40 CFR 279.70(b) and 279.75).</p> <p><b>Dust Suppression</b></p> <p><b>6-74.</b> Used oil cannot be used for dust suppression unless allowed by the state (40 CFR 279.82).</p>	<p>Verify that notice from the burner has been received that indicates the burner notified the USEPA of the location and used oil management activities and that the burner will only burn off-specification oil in approved furnaces and boilers.</p> <p>Verify that a copy of the notice is kept for 3 yr from the date the last shipment of off-specification used oil is shipped to the burner.</p> <p>Verify that used oil is not used for dust suppression at the facility.</p>

## **Appendix 6-1**

### **Used Oil Classifications (40 CFR 279.10 and 279.11)**

**Used Oil and the Following Used Oil Mixtures Which Are Required to be Handled According to the Requirements in 40 CFR 279**  
**(40 CFR 279.10(b)(2)(II), 279.10(b)(2)(III), 279.10(b)(3), 279.10(c)(2), 279.10(d), 279.10(e)(2), and 279.10(f))**

1. Used oil containing more than 1000 ppm of total halogens when the generator has demonstrated that the used oil does not contain hazardous waste.
2. Used metalworking oils/fluids containing chlorinated paraffins when they are recycled or disposed of and the generator has demonstrated that the used oil does not contain hazardous waste.
3. Used oils contaminated with chlorofluorocarbons (CFCs) that have been mixed with used oil from sources other than refrigeration units and the generator has demonstrated that the used oil does not contain hazardous waste.
4. Materials produced from used oil that are burned for energy recovery.
5. Mixtures of used oil and hazardous waste if the resultant mixture does not exhibit any characteristics of hazardous waste.
6. Mixtures of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability (e.g., ignitable-only mineral spirits) and is not a listed waste.
7. Mixtures of used oil and conditionally exempt small quantity generator (CESQG) hazardous waste.
8. Mixtures of used oil and fuels or other fuel products except those marked onsite by the generator for use in the generators own vehicles if the used oil and the diesel fuel have been mixed.
9. Used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits:

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	100 °F minimum
Total halogens	4000 ppm maximum

10. Materials containing or otherwise contaminated with used oil that are burned for energy recovery.
11. Used oil drained or removed from materials containing or otherwise contaminated with used oil.
12. Used oil at marketers or burners with any quantifiable level of polychlorinated biphenyls (PCBs) (the standards in 40 CFR 761.20(a) must also be met for this type of oil).

(continued)

## **Appendix 6-1 (continued)**

### **Used Oil That is Required to be Handled as a Hazardous Waste (40 CFR 279.10(b))**

1. Mixtures of used oil and listed hazardous waste.
2. Used oil containing more than 1000 ppm total halogens.
3. Used metalworking oils/fluids containing chlorinated paraffins if processed through a tolling agreement.
4. Used oil contaminated with CFCs removed from refrigeration units where the CFCs are destined for reclamation.
5. Mixtures of used oil and hazardous waste if the resultant mixture exhibits characteristics of a hazardous waste.

### **Used Oil That is Not Subject to the Requirements of 40 CFR 279, Nor is it to be Handled as a Hazardous Waste Unless Testing Indicates Hazardous Constituents (40 CFR 279.10(c)(1), 279.10(d)(2), 279.10(e)(1), 279.10(e)(3), 279.10(e)(4), and 279.10(f) through 279.10(h))**

1. Mixtures of used oil and diesel fuel mixed onsite by the generator of the used oil for use in the generator's own vehicles.
2. Materials that are reclaimed from used oil that are used beneficially and are not burned for energy recovery or used in a manner constituting disposal.
3. Materials derived from used oil that are disposed of or used in a manner constituting disposal.
4. Used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products.
5. Wastewater discharges with de minimis quantities of used oil.
6. Used oil within a crude oil or natural gas pipeline.
7. Used oil on vessels.
8. Materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed so that no signs of visible free-flowing remains.



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>PETROLEUM, OIL, AND LUBRICANT</b> <b>(POL) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> <b>NA   C   RMA</b>	<b>REVIEWER CHECKS:</b>		

**SECTION 7**  
**SOLID WASTE MANAGEMENT**

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**The contents of this section are the minimum requirements the assessor must review. The assessor must also review applicable state and local regulations.**

## **SECTION 7**

### **SOLID WASTE MANAGEMENT**

#### **A. Applicability**

This section addresses the collection, storage, and disposal of solid waste at FWS facilities. Solid waste is considered to be nonhazardous trash, rubbish, garbage, bulky wastes, liquids, or sludges generated by any facility's operations and activities. The handling and disposal of asbestos waste materials is addressed in Section 8, Special Pollutants Management.

Recycling and resource recovery activities are also included in this section because they are considered a form of solid waste management.

#### **B. Federal Legislation**

- *Resource Conservation and Recovery Act (RCRA) of 1976.* This is the Federal law which governs the disposal of solid waste. Subtitle D of this Act, as last amended in November 1984, Public Law (PL) 98-616, 42 U.S. Code (USC) 6941-6949a, establishes Federal standards and requirements for state and regional authorities respecting solid waste disposal. The objectives of this subtitle are to assist in developing and encouraging methods for the disposal of solid waste which are environmentally sound and which maximize the utilization of valuable resources recoverable from solid waste. The objectives are to be achieved through Federal technical and financial assistance to states and regional authorities for comprehensive planning (42 USC 6941).
- *The Solid Waste Disposal Act (SWDA) of 1965, as amended.* This Act requires that Federal facilities comply with all Federal, state, interstate, and local requirements concerning the disposal and management of solid wastes. These requirements include permitting, licensing, and reporting.
- *The Occupational Safety and Health Act (OSHA).* The general purpose of this Act is to assure, as much as possible, every individual working in the United States safe and healthful working conditions. The control of medical waste is one aspect of assuring safe and healthy working conditions.
- *Executive Order (EO) 12088, Federal Compliance with Pollution Standards.* This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- *EO 12780, Federal Agency Recycling and the Council on Federal Recycling and Procurement Policy.* This EO requires Federal agencies to promote cost-effective waste reduction

and recycling of reusable materials from wastes generated at their activities. Federal agencies are required to initiate a program to promote cost-effective waste reduction through:

1. practices that reduce waste generation, and
2. the recycling of recyclable materials such as paper, plastic metals, glass, used oil, lead acid batteries, and tires and the composting of organic materials such as yard waste.

### **C. State/Local Regulations**

The Federal government set minimum national standards for municipal solid waste disposal in 40 CFR 258, but state and local governments are responsible for implementing and enforcing waste programs. States are required to develop their own programs based on the Federal regulations. Most states and municipalities have already developed their own regulations governing the permitting, licensing, and operations of landfills, incinerators, and source separation/recycling programs.

States are required to incorporate revised criteria for municipal solid waste landfills (MSWLF) into their permit programs and gain approval from U.S. Environmental Protection Agency (USEPA). States that apply for and receive USEPA approval of their programs have the opportunity to provide a lot of flexibility in implementing the regulations. This flexibility allows states to take local conditions into account and gives them the authority to alter some of the requirements. Evaluators will need to determine if a state has been granted approval for the 40 CFR 258 program in order to accurately assess a facility's compliance with the criteria. Many states have also instigated categories of special wastes which cannot be placed in landfills or dumps, or may only be disposed of under specific circumstances.

### **D. Key Compliance Requirements**

- **Storage/Collection** - Facilities are required to store all solid wastes and materials separated for recycling so that it does not cause a fire, safety, or health hazard. All facilities are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation. All collection equipment is required to have a suitable cover to prevent spillage, and the equipment is to be constructed, operated, and maintained adequately. All facilities are required to collect solid wastes or materials separated for recycling according to a certain schedule, and in a safe, efficient manner (40 CFR 243.200-1, 243.201-1, 243.202-1(a) through 243.202-1(c), 243.203-1, and 243.204-1).
- **Solid Waste Containers** - Facility personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (GMP).
- **Recycling** - FWS facilities should participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical. Facilities with offices of over 100 office workers are required to recover high-grade paper. Facilities at which more than 500 families reside are required to recycle newspapers. Any facility

generating 10 tons [101,605 kg] or more of waste corrugated containers per month is required to segregate or collect separately for recycling or alternate energy use (40 CFR 246.200-1 and 246.202-1).

- **Specific Wastes - Bulky wastes** must be disposed of according to certain methods, which differ depending on the variety of waste, i.e., automobile bodies, furniture, and appliances are required to be salvaged, or crushed and pushed onto working face near the bottom of the cell. Water treatment plant sludges, containing no free moisture, and digested or heat treated wastewater treatment plant sludges must be disposed of by covering them with soil or municipal solid wastes. Incinerator and air pollution control residues must be disposed of by covering them as necessary to prevent their becoming airborne (40 CFR 241.200-3).
- **Land Disposal Site Operations Other Than an MSWLF-** Facilities are required to place cover material at the end of each operating day. Land disposal sites that accept special wastes must have approval from the responsible agency. Facilities that operate land disposal sites are required to provide a list of excluded materials to regular users, to operate the sites in a manner that will protect water quality and air quality, and control decomposition gases and vectors. Land disposal sites are required to be designed and operated in an aesthetically acceptable manner, and to be designed, constructed, and operated to protect the health and safety of personnel. Land disposal site cover material is required to minimize fire hazards, infiltration of precipitation, odors and litter, control gas venting and vectors, discourage scavenging, and provide a pleasing appearance. Municipal solid waste and cover material must be compacted to the smallest practicable volume. The operators of land disposal sites are required to maintain records and monitoring data (40 CFR 241.200-3(a), 241.201-2, 241.201-3, 241.204-3, 241.205-3 241.206-241.211, and 241.212-3(a)).
- **Land Disposal Site Closure Other Than an MSWLF -** Upon closure of a site, a detailed description is required to be recorded with the area's land recording authority. Facilities should survey for and be aware of old disposal sites at the facility (40 CFR 241.212-3(b)).
- **New Landfills Other Than MSWLFs -** New landfills are required to meet certain location and design criteria, which include evaluation of hydrogeology and onsite soil characteristics, and verification of easy access to vehicles. Plans for the design, construction, and operation of new sites or modification to existing sites are required to be prepared or approved by a professional engineer (40 CFR 241.202-2 and 241.203-1).
- **Municipal Solid Waste Landfills (MSWLFs) -** MSWLFs must meet restrictions for location, the types of waste to be placed in them, and the types of monitoring required. Limitations, design criteria and closure requirements vary depending on whether it is a new or existing MSWLF (40 CFR 258).
- **Medical Waste -** Contaminated reusable sharps and other regulated wastes are required to be placed in puncture resistant, color coded, leakproof containers, as soon as possible after use until properly reprocessed. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping, and specific labeling and handling requirements are to be followed (29 CFR 1910.1030(d)).

- **Medical Waste Containers** - All bins, cans, and other receptacles intended for reuse that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis. Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards, which include the biohazard symbol, and being colored a fluorescent orange with contrasting-colored lettering and symbols (29 CFR 1910.1030(d)(4)(ii)(c) and 1910.1030(g)(1)(i)).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **E. Key Compliance Definitions**

- **Active Life** - the period of operation beginning with the initial receipt of solid waste and ending with the completion of closure activities (40 CFR 258.2).
- **Active Portion** - that part of a facility or unit that has received or is receiving wastes and that has not been closed (40 CFR 258.2).
- **Aquifer** - a geological formation, group of formations, or a portion of a formation capable of yielding significant quantities of ground water to wells or springs (40 CFR 258.2).
- **Blood** - human blood, human blood components, and products made from human blood (29 CFR 1910.1030(a)).
- **Bottom Ash** - the solid material that remains on a hearth or falls off the grate after thermal processing is complete (40 CFR 240.101(b)).
- **Bulky Wastes** - large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversize wastes which large size precludes or complicates their handling by normal solid waste collection, processing, or disposal methods (40 CFR 243.101).
- **Cell** - compacted solid wastes that are enclosed by natural soil or cover material in a land disposal site (40 CFR 241.101).
- **Collection** - the act of removing solid waste (or materials which have been separated for the purpose of recycling) from a central storage point (40 CFR 243.101).
- **Commercial Solid Waste** - all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes (40 CFR 243.101).
- **Construction and Demolition Wastes** - the waste building materials, packaging and rubble resulting from the construction, renovation, repair, and demolition operation on pavements, houses, commercial buildings, and other structures (40 CFR 243.101).

- **Contaminated** - the presences or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface (29 CFR 1910.1030(a)).
- **Contaminated Sharps** - any contaminated object that can penetrate the skin, including but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires (29 CFR 1910.1030(a)).
- **Corrugated Container Waste** - discarded corrugated boxes (40 CFR 246.101).
- **Cover Material** - soil or other suitable material that is used to cover compacted solid wastes in a land disposal site (40 CFR 241.101).
- **Daily Cover** - cover material that is spread and compacted on the top and side slopes of compacted solid wastes at least at the end of each operating day in order to control vectors, fire, moisture, and erosion and to assure an aesthetic appearance (40 CFR 241.101).
- **Decontamination** - the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface of item is rendered safe for handling, use, or disposal (29 CFR 1910.1030(a)).
- **Design Capacity** - the weight of solid waste of a specified gross calorific value that a thermal processing facility is designed to process in 24 h of continuous operation (40 CFR 240.101(d)).
- **Existing MSWLF Unit** - any MSWLF unit that is receiving solid waste as of the appropriate dates specified in 258.1(e) (see Appendix 7-1). Waste placement in existing units must be consistent with past operating practices or modified practices to ensure good management (40 CFR 258.2).
- **Facility** - all contiguous land and structures, other appurtenance, and improvements on the land used for the disposal of solid waste (40 CFR 258.2).
- **Final Cover** - cover materials that serve the same function as daily cover but, in addition, may be permanently exposed on the surface (40 CFR 241.101).
- **Fly Ash** - suspended particles, charred paper, dust, soot, and other partially oxidized matter carried in the products of combustion (40 CFR 240.101).
- **Food Waste** - the organic residues generated by the handling, storage, sale, preparation, cooking, and serving of foods, commonly called garbage (40 CFR 243.101).
- **Garbage** - in relation to solid waste coming from outside the continental United States, it is all waste material derived in whole or in part from fruits, vegetables, meats, or other plant or animal material, and other refuse of any character whatsoever that has been associated with any such material on board any means of conveyance, and including food scraps, table refuse, galley refuse, food wrappers, or packaging materials, and other water materials from stores, food preparation areas, passengers; or crews quarters, dining rooms, or

any other areas or means of conveyance. It also means meals and other food that were available for consumption by passengers and crew on an aircraft but were not consumed (7 CFR 330.400(b)).

- **Good Management Practice (GMP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Groundwater** - water present in the unsaturated zone of an aquifer (40 CFR 241.101).
- **High-grade Paper** - letterhead, dry copy papers, miscellaneous business forms, stationary, typing paper, tablet sheets, and computer printout paper and cards, commonly sold as white ledger, computer printout and tab card grade by the wastepaper industry (40 CFR 246.101).
- **Household Waste** - any solid waste, (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use-recreation areas) (40 CFR 258.2).
- **Indian Lands of Indian Country** - this means (40 CFR 258.2):
  1. all land within the limits of any Indian reservation under the jurisdiction of the U.S. Government, notwithstanding the issuance of any patent, and including rights-of-way running throughout the reservation
  2. all dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of the state
  3. all Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.
- **Indian Tribe** - any Indian tribe, band, nation, or community recognized by the Secretary of the Interior and exercising substantial governmental duties and powers on Indian lands (40 CFR 258.2).
- **Industrial Solid Waste** - the solid waste generated by industrial processes and manufacturing that is not a hazardous waste (40 CFR 243.101).
- **Industrial Solid Waste** - in relation to MSWLFs, solid waste generated by manufacturing or industrial processes that is not a hazardous waste regulated under subtitle C of RCRA. Such waste may include, but is not limited to, waste resulting from the following manufacturing processes: electric power generation; fertilizer/agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment; and water treatment. This term does not include mining waste or oil and gas waste (40 CFR 258.2).



- ***Infectious Waste*** -
  1. equipment, instruments, utensils, and fomites of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies
  2. laboratory wastes such as pathological specimens and disposable fomites (any substance that may harbor or transmit pathological organisms)
  3. surgical operating room pathological specimens and disposable fomites attendant thereto and similar disposable materials from outpatient areas and emergency rooms (40 CFR 240.101).
- ***Institutional Solid Waste*** - solid wastes generated by educational, health care, correctional and other institutional facilities (40 CFR 243.101).
- ***Intermediate Cover*** - cover material that serves the same function as daily cover, but must resist erosion for a longer period of time, because it is applied in areas where additional cells are not to be constructed for extended periods of time (40 CFR 241.101).
- ***Lateral Expansion*** - a horizontal expansion of the waste boundaries of an existing MSWLF unit (40 CFR 258.2).
- ***Leachate*** - liquid that has percolated through solid waste and has extracted dissolved or suspended materials from it (40 CFR 241.101).
- ***Leachate*** - in relation to MSWLFs, this is a liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste (40 CFR 258.2).
- ***Medical/Pathological Wastes*** - any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals. This does not include hazardous waste or household waste (40 CFR 259.10).
- ***Municipal Solid Waste*** - residential and commercial solid wastes generated within a community (40 CFR 240.101).
- ***Municipal Solid Waste Landfill (MSWLF) Unit*** - a discrete area of land or an excavation that received household waste and that is not a land application unit, surface impoundment, injection well, or waste pile. It may also receive other types of RCRA-D wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Such a landfill may be publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion (40 CFR 258.2).

- **New MSWLF Unit** - any MSWLF unit that has not received wastes prior to 9 October 1993, or prior to 9 October 1995, if the MSWLF unit disposes of less than 20 tons [18,143,699 kg] of municipal solid waste daily, based on an annual average, and the MSWLF unit serves either:
  1. a community that experiences an annual interruption of at least 3 consecutive months of surface transportation that prevents access to a regional waste management facility
  2. a community that has no practicable waste management alternative and the landfill is located in an areas that annually receives less than or equal to 25 in. [62.5 cm] of precipitation (40 CFR 258.2).
- **Open Burning** - in relation to MSWLFs, the combustion of solid waste without (40 CFR 258.2):
  1. control of combustion air to maintain adequate temperature for efficient combustion
  2. containment of the combustion reaction in an enclosed device to provide sufficient residence time and mixing for complete combustions, and
  3. control of the emission of the combustion product.
- **Open Burning** - burning of solid wastes in the open, such as in an open dump (40 CFR 240.101(r)).
- **Open Dump** - a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors, and scavengers (40 CFR 240.101).
- **Recoverable Resource** - materials that still have useful physical, chemical, or biological properties after serving their original purpose and can, therefore, be reused or recycled for the same or other purposes (40 CFR 245.101).
- **Recycled Material** - a material that is utilized in place of a primary, raw, or virgin material in manufacturing a product (40 CFR 245.101).
- **Recycling** - the process by which recovered materials are transformed into new products (40 CFR 245.101).
- **Regulated Wastes** - liquid or semi-liquid blood or other potentially infectious materials, contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling, contaminated sharps, and pathological and microbiological wastes containing blood or other potentially infectious materials (29 CFR 1910.1030(a)).
- **Residential Solid Waste** - the wastes generated by the normal activities of households, including, but not limited to, food wastes, rubbish, ashes, and bulky wastes (40 CFR 243.101).
- **Runoff** - the portion of precipitation that drains from an area as surface flow (40 CFR 241.101).

- **Runoff** - in relation to MSWLF, any rainwater, leachate, or other liquid that drains over land from any part of a facility (40 CFR 258.2).
- **Run-on** - any rainwater, leachate, or other liquid that drains over land onto any part of a facility (40 CFR 258.2).
- **Sanitary Landfill** - a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day (40 CFR 240.101).
- **Separate Collection** - collection of recyclable materials which have been separated at the point of generation and keeping those materials separated from other collected solid waste in separate compartments of a single collection vehicle or through the use of separate collection vehicles (40 CFR 246.101).
- **Sludge** - the accumulated semiliquid suspension of settled solids deposited from wastewaters or other fluids in tanks or basins (40 CFR 240.101).
- **Sludge** - in relation to MSWLFs, any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 258.2)
- **Solid Waste** - in relation to MSWLFs, any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded materials, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permit under 33 USC 1342, or source, special nuclear, or by-product material as defined by the *Atomic Energy Act of 1954*, as amended (68 Statute 932) (40 CFR 258.2).
- **Solid Waste** - garbage, refuse, sludge, and other discarded solid materials resulting from industrial and commercial operations and from community activities. It does not include solids or dissolved materials in domestic sewage or other significant pollutants in water resources (40 CFR 240.101).
- **Source Separation** - the setting aside of recyclable materials at their point of generation by the generator (40 CFR 246.101).
- **Special Wastes** - nonhazardous solid wastes requiring handling other than that normally used for municipal solid wastes (40 CFR 240.101).
- **Transfer Station** - a station at which solid wastes are concentrated for transport to a processing facility or land disposal site. A transfer station may be fixed or mobile (40 CFR 243.101).

- ***Universal Precautions*** - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens (29 CFR 1910.1030(a)).
- ***Uppermost Aquifer*** - the geologic formation nearest the natural ground surface that is an aquifer, as well as, lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary (40 CFR 258.2).
- ***Vector*** - a carrier, usually an arthropod, that is capable of transmitting a pathogen from one organism to another (40 CFR 240.202).
- ***Waste Management Unit Boundary*** - a vertical surface located at the hydraulically down-gradient limit of the unit. This vertical surface extends down into the uppermost aquifer (40 CFR 258.2).
- ***Working Face*** - that portion of the land disposal site where solid wastes are discharged and are spread and compacted prior to the placement of cover material (40 CFR 241.101).

## **SOLID WASTE MANAGEMENT PROTOCOL**

### **GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
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Municipal Solid Waste Landfills (MSWLFs)		
Location Restrictions	7-47 through 7-52	37
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## **SOLID WASTE MANAGEMENT**

### **Records to Review**

- Record of current nonhazardous solid waste management practices
- Documentation of locations (map) and descriptions of all nonhazardous waste storage, and disposal facilities
- Records of operational history of all active and inactive disposal facilities
- State and Federal inspection reports
- Environmental monitoring procedures or plans
- Records of resource recovery practices, including the sale of materials for the purpose of recycling
- Solid waste removal contracts and inspection records
- Operating record for onsite municipal solid waste landfills

### **Physical Features to Inspect**

- Resource recovery facilities
- Incineration and land disposal facilities (active and inactive)
- Areas where nonhazardous waste is disposed
- Construction debris areas
- Waste receptacles
- Solid waste vehicle storage and washing areas
- Compost facilities
- Transfer stations
- Recycling centers





**COMPLIANCE CATEGORY:  
SOLID WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL FACILITIES</b></p> <p><b>7-1.</b> Actions or changes since previous review of solid waste management should be examined (GMP).</p> <p><b>7-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on solid waste management should be available at the facility (GMP).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>Verify that copies of the following regulations are available and kept current:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards.</i></li> <li>- 7 CFR 330, <i>Federal Plant Pest Regulations, General, Plant Pests, Soil, Stone, Quarry Products, and Garbage.</i></li> <li>- 29 CFR 1910.1030, <i>Bloodborne Pathogens.</i></li> <li>- 40 CFR 240, <i>Guidelines for the Thermal Processing of Solid Waste.</i></li> <li>- 40 CFR 241, <i>Guidelines for the Land Disposal of Solid Wastes.</i></li> <li>- 40 CFR 243, <i>Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste.</i></li> <li>- 40 CFR 245, <i>Promulgation Resource Recovery Facility Guidelines.</i></li> <li>- 40 CFR 246, <i>Source Separation for Materials Recovery Guidelines.</i></li> <li>- 40 CFR 258, <i>Criteria for Municipal Solid Waste Landfills.</i></li> </ul> <p>(NOTE: A consolidated listing of approved test methods should also be maintained at the facility. (<i>Test Methods for Evaluating Solid Waste, Physical/Chemical Methods</i>, USEPA Publication SW-846, Document # PB87-120-291).)</p>

<b>COMPLIANCE CATEGORY:</b> <b>SOLID WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>7-3. FWS facilities are required to comply with state and local solid waste regulations (EO 12088, Section 1-1).</p>	<p>Verify that the facility is comply with state and local solid waste requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- license or permit requirements for existing onsite landfills</li> <li>- requirements for filing a closure plan for onsite landfills specifying monitoring and inspection procedures</li> <li>- design and operation specifications for solid waste receptacles</li> <li>- disposal of solid waste offsite only at licensed or permitted facilities</li> <li>- design and policy procedures of thermal processing of solid waste</li> <li>- analysis for hazardous properties of ash residues and sludge from air pollution control devices at coal-fired facility heating plant operations before sale or disposal</li> <li>- handling and disposal of medical, pathological, and infectious waste</li> <li>- recycling requirements</li> <li>- disposal of household wastes</li> <li>- yard waste</li> <li>- disposal of used tires.)</li> </ul>
<p>7-4. Facilities will meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning solid waste have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p>7-5. FWS facilities should report all Notices of Violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).</p>	<p>Determine if the facility has received an NOV relating to solid waste management.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>

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**REGULATORY  
REQUIREMENTS:**

7-6. Facilities should maintain documentation of where their waste is being sent for disposal (GMP).

**REVIEWER CHECKS:**

Verify that the facility has copies of any contracts for waste disposal and documentation of the final place of disposal.



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-9.</b> Facilities are required to maintain collection equipment according to certain standards if such equipment is considered to be operating in interstate or foreign commerce (40 CFR 243.202-1(a)).</p>	<p>Verify that all vehicles used for the collection and transportation of solid waste meet all applicable standards established by the Federal Government including:</p> <ul style="list-style-type: none"> <li>- <i>Motor Carrier Safety Standards</i> (49 CFR 390 through 396).</li> <li>- <i>Noise Emission Standards for Motor Carriers Engaged in Interstate Commerce</i> (40 CFR 202).</li> <li>- <i>Federal Motor Vehicle Safety Standards</i> (49 CFR 500 through 580) (Federally owned collection equipment only).</li> </ul>
<p><b>7-10.</b> All collection equipment is required to meet specific criteria (40 CFR 243.202-1(b) and 243.202-1(d)).</p>	<p>Verify that all vehicles used for collection and transportation of solid wastes or materials separated for recycling are enclosed and have suitable cover to prevent spillage.</p> <p>Verify that equipment used in the compaction, collection, and transportation of solid waste or materials separated for recycling are constructed, operated, and maintained adequately.</p> <p>Verify that the following types of equipment meet that standards established by the American National Standards Institute:</p> <ul style="list-style-type: none"> <li>- rear-loading compaction equipment</li> <li>- side-loading compaction equipment</li> <li>- front-loading compaction equipment</li> <li>- tilt-frame equipment</li> <li>- hoist-type equipment</li> <li>- satellite vehicles</li> <li>- special collection compaction equipment</li> <li>- stationary compaction equipment.</li> </ul>
<p><b>7-11.</b> All facilities are required to collect solid wastes or materials separated for recycling according to a certain schedule (40 CFR 243.203-1).</p>	<p>Verify that solid wastes which contain food wastes are collected at a minimum of once during each week.</p> <p>Verify that bulky wastes are collected at a minimum of once every 3 mo.</p> <p>Verify that all wastes are collected with sufficient frequency to inhibit the propagation or attraction of vectors and the creation of nuisances.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-12.</b> Facilities are required to collect solid wastes in a safe, efficient manner (40 CFR 243.204-1).</p> <p><b>7-13.</b> As a good management practice, facility industrial shop waste receptacles should be inspected quarterly to verify that hazardous wastes are not being deposited (GMP).</p> <p><b>7-14.</b> Facility personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (GMP).</p>	<p>Verify that solid wastes or materials separated for recycling are collected in a safe, efficient manner.</p> <p>Verify that the collection vehicle operator immediately cleans up any spillage caused by his operations.</p> <p>Verify that receptacles were inspected by reviewing records and interviewing personnel.</p> <p>Verify that corrective actions were taken where indicated.</p> <p>Verify that hazardous waste is not present in the solid waste receptacles at shops by a visual check.</p> <p>Verify that a program exists at the facility to keep personnel informed about proper waste disposal practices.</p>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RECYCLING</b></p> <p><b>7-15.</b> Facilities should participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical (GMP).</p> <p><b>7-16.</b> Facilities with office facilities of over 100 office workers are required to recover high-grade paper (40 CFR 246.200-1).</p> <p><b>7-17.</b> Facilities at which more than 500 families reside are required to recycle newspapers (40 CFR 246.201-1).</p> <p><b>7-18.</b> Facilities generating 10 tons [10,160.47 kg] or more of waste corrugated containers per month are required to segregate/separately collect for recycling or alternative energy use (40 CFR 246.202-1).</p>	<p>Verify that a solid waste reduction program exists.</p> <p>Verify that recycling programs are in compliance with applicable state or local requirements.</p> <p>Verify that reusable or marketable materials are collected at regular intervals.</p> <p>Determine if the facility has over 100 office workers.</p> <p>Verify that high-grade paper is separated at the source of generation.</p> <p>Verify that high-grade paper is separately collected.</p> <p>Verify that high-grade paper is sold for recycling.</p> <p>Determine if the facility has more than 500 families residing on it.</p> <p>Verify that used newspapers are separated at the source of generation.</p> <p>Verify that used newspapers are separately collected.</p> <p>Verify that used newspapers are sold for recycling.</p> <p>Determine if the facility generates 10 tons [10,160.47 kg] or more of waste corrugated containers per month.</p> <p>Verify that waste corrugated containers are collected separately.</p> <p>Verify that waste corrugated containers are recycled or used as an alternative energy resource.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>LAND DISPOSAL SITES OTHER THAN MSWLFs</b></p> <p><b>Specific Wastes</b></p> <p><b>7-19.</b> Facilities will identify what wastes can and cannot be accepted at the disposal facility in conjunction with the responsible agency (40 CFR 241.200-1).</p> <p><b>7-20.</b> Bulky wastes should be disposed of according to certain methods (GMP).</p> <p><b>7-21.</b> Water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges should be disposed of according to certain methods (GMP).</p> <p><b>7-22.</b> Incinerator and air pollution control residues should be disposed of according to certain methods (GMP).</p>	<p>Verify that the facility has specifically identified what wastes can and cannot be accepted for disposal at the site.</p> <p>Verify that automobile bodies, furniture, and appliances are either salvaged or crushed and pushed onto the working face near the bottom of the cell.</p> <p>Verify that demolition and construction debris, tree stumps, and large timbers are pushed onto the working face near the bottom of the cell.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.200-3(b).)</p> <p>Verify that water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges are covered with soil or municipal solid wastes.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.200-3(d).)</p> <p>Verify that incinerator and air pollution control residues are incorporated into the face and covered as necessary to prevent them from becoming airborne.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.200-3(e).)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>LAND DISPOSAL SITES OTHER THAN MSWLFs</b></p> <p><b>Operations</b></p> <p><b>7-23.</b> Facilities should place cover material on land disposal sites at the end of each operating day (GMP).</p> <p><b>7-24.</b> Using information from the generation sources on the facility, the disposal facility operator and the responsible agency are required to determine specific wastes that are excluded from disposal and identify them in plans (40 CFR 241.201-1).</p> <p><b>7-25.</b> Facilities which operate land disposal sites should provide a list of excluded materials to regular users (GMP).</p>	<p>Verify that cover material is put in place daily by arriving at the site before it opens.</p> <p>(NOTE: This GMP is based on recommendations in 40 CFR 241.200-3(a).)</p> <p>Verify that the disposal facility has designated what wastes are excluded from disposal at the site.</p> <p>Verify that the list of excluded wastes is documented in a plan.</p> <p>Verify that a list of excluded materials is displayed prominently at the site entrance.</p> <p>Verify that a list of excluded materials is given to all regular users of the site.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.201-3.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-26.</b> The location, construction, and design of land disposal sites are required to meet the most stringent of applicable water quality standards and/or be constructed, located, designed, and operated in a manner to provide adequate protection to ground and surface water used as drinking water supplies (40 CFR 241.204-1).</p>	<p>Verify that applicable water quality standards are met and ground and surface water used as drinking water supplies are protected.</p>
<p><b>7-27.</b> Land disposal sites should be operated in a manner which will protect water quality (GMP).</p>	<p>Verify that surface water course and runoff are diverted from the land disposal site.</p> <p>Verify that the land disposal site is constructed and graded to promote rapid surface water runoff without excessive erosion.</p> <p>Verify that regrading is done as necessary to avoid ponding of precipitation and to maintain cover material integrity.</p> <p>Verify that siltation or retention basins or other approved methods of retarding runoff are used where necessary to avoid stream siltation or flooding problems.</p> <p>Verify that leachate collection and treatment systems are used where necessary to protect groundwater and surface water resources.</p> <p>Verify that municipal solid wastes and leachate are not in contact with groundwater or surface water.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.204-3.)</p>
<p><b>7-28.</b> Land disposal sites should operate in a manner which will protect air quality (GMP).</p>	<p>Verify that there is no open burning of municipal solid wastes.</p> <p>Verify that dust control measures are initiated as necessary.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.205-3.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>7-29. Land disposal sites are required to control decomposition gases as necessary to avoid posing a hazard to occupants of adjacent property (40 CFR 241.206-1).</p>	<p>Verify that land disposal sites are controlling decomposition gases.</p>
<p>7-30. Land disposal sites should control decomposition gases according to the following recommended procedures (GMP).</p>	<p>Verify that decomposition gases are not allowed to migrate laterally from the land disposal site.</p> <p>Verify that decomposition gases do not pose an explosion or toxicity hazard.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.206-3.)</p>
<p>7-31. Land disposal sites are required to control vectors (40 CFR 241.207-1).</p>	<p>Verify that conditions are maintained that are unfavorable for the harboring, feeding, and breeding of vectors.</p>
<p>7-32. Land disposal sites are required to be designed and operated in an aesthetically acceptable manner (40 CFR 241.208-1).</p>	<p>Verify that the disposal site is designed and operated in an aesthetically acceptable manner.</p>
<p>7-33. For the land disposal site to be aesthetically acceptable, specific practices should be followed (GMP).</p>	<p>Verify that blowing litter is controlled through portable litter fences or other devices.</p> <p>Verify that wastes that are easily moved by wind are covered as necessary to prevent their becoming airborne.</p> <p>Verify that onsite vegetation is cleared only as necessary.</p> <p>Verify that natural windbreaks are maintained.</p> <p>Verify that buffer strips and/or berms are used to screen the site from nearby residences and major roadways.</p> <p>Verify that salvage material is removed from the site frequently.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
7-33. (continued)	(NOTE: This GMP is based on recommendations found in 40 CFR 208-3.)
7-34. Land disposal site cover material must meet certain criteria (40 CFR 241.209-1).	<p>Verify that cover material is applied as necessary to:</p> <ul style="list-style-type: none"> <li>- minimize fire hazards</li> <li>- minimize infiltration of precipitation</li> <li>- minimize odors</li> <li>- minimize blowing litter</li> <li>- control gas venting</li> <li>- control vectors</li> <li>- discourage scavenging</li> <li>- provide a pleasing appearance.</li> </ul>
7-35. Cover material should be applied according to specific recommendations (GMP).	<p>Verify that cover material is applied daily regardless of weather.</p> <p>Verify that the thickness of the compacted daily cover is no less than 6 in. [15.24 cm].</p> <p>Verify that intermediate cover is applied on areas where additional cells are not to be constructed for extended periods of time.</p> <p>Verify that final cover is applied on each area as it is completed or if the area is to remain idle for over 1 yr.</p> <p>Verify that the surface grade promotes surface water runoff without erosion to minimize infiltration.</p> <p>Verify that intermediate cover is at least 1 ft [0.30 m] thick and final cover is at least 2 ft [0.61 m] thick.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 209-3.)</p>
7-36. Municipal solid waste and cover material must be compacted to the smallest practicable volume (40 CFR 241.210-1).	Verify that the solid waste and cover material is compacted to the smallest practicable volume.



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-37.</b> Compaction of wastes and cover materials should be done according to recommended procedures (GMP).</p>	<p>Verify that on an operating day municipal solid waste handling equipment is capable of performing the following functions:</p> <ul style="list-style-type: none"> <li>- spread solid waste in layers no more than 2 ft [0.61 m] thick while confining it to the smallest practicable area</li> <li>- compact the spread solid wastes to the smallest practicable volume</li> <li>- place, spread, and compact the cover material daily.</li> </ul> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 214.210-2.)</p>
<p><b>7-38.</b> Land disposal sites are required to be designed, constructed, and operated to protect the health and safety of personnel (40 CFR 241.211-1).</p>	<p>Verify that the health and safety of personnel are a consideration in the design, construction and operation of the site.</p>
<p><b>7-39.</b> Specific health and safety procedures should be followed in order to protect personnel at land disposal sites (GMP).</p>	<p>Verify that a safety manual is available to employees.</p> <p>Verify that personal safety devices such as hearing and eye protection, are provided to facility employees.</p> <p>Verify that equipment is provided with safety devices.</p> <p>Verify that provisions to extinguish fires exist.</p> <p>Verify that communications equipment is available onsite.</p> <p>Verify that scavenging is prohibited.</p> <p>Verify that access to the site is controlled.</p> <p>Verify that traffic signs or markers are provided to promote an orderly traffic pattern to and from the discharge area.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.211-2 and 241.211-3.)</p>

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**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**7-40.** Operators of land disposal sites are required to maintain records and monitoring data to be provided, upon request, to the responsible agency (40 CFR 241.212-1).

Verify that required records are available.

**7-41.** Records being maintained at land disposal site should cover specific topics (GMP).

Verify that records are maintained and cover at least:

- major operational problems, complaints, or difficulties
- results of leachate sampling and analyses
- results of gas sampling and analyses
- results of groundwater and surface water quality sampling and analyses upstream and downstream of the site
- vector control efforts
- dust and litter control efforts
- quantitative measurements of the solid wastes handled
- description of solid waste materials received.

(NOTE: This GMP is based on recommendations found in 40 CFR 241.212-3(a).)

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>LAND DISPOSAL SITES OTHER THAN MSWLFs</b></p> <p><b>Closure</b></p> <p>7-42. Upon closure of a site, a detailed description should be recorded with the area's land recording authority (GMP).</p> <p>7-43. Facilities should survey for and be aware of old disposal sites at the facility (GMP).</p>	<p>Verify that upon closure of a site, a detailed description is recorded with the area's land recording authority.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.212-3(b).)</p> <p>Determine if there are any old disposal sites by interviewing personnel.</p> <p>Determine whether a records review has been done to identify former disposal sites.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SITE CRITERIA FOR NEW LANDFILLS OTHER THAN MSWLFs</b></p> <p><b>7-44.</b> Site selection and utilization are required to be consistent with public health and welfare, and air and water quality standards and adaptable to appropriate land-use plans (40 CFR 241.202-1).</p> <p><b>7-45.</b> New landfills should meet certain location and design criteria (GMP).</p> <p><b>7-46.</b> Plans for the design, construction, and operation of new sites or modifications to existing sites are required to be prepared or approved by a professional engineer (40 CFR 241.203-1).</p>	<p>Verify that the site and utilization are consistent with public health and welfare and other necessary environmental standards.</p> <p>Verify that the hydrogeology of the site has been evaluated.</p> <p>Verify that onsite soil characteristics have been evaluated.</p> <p>Verify that environmental factors, climatological conditions, and socioeconomic factors have been considered in site selection.</p> <p>Verify that the site is easily accessible to vehicles.</p> <p>Verify that the site location will not attract birds and pose a hazard to low-flying aircraft.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.202-2.)</p> <p>Verify that plans have been prepared or approved by a professional engineer.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MUNICIPAL SOLID WASTE LANDFILLS (MSWLFs)</b></p> <p><b>Location Restrictions</b></p> <p><b>7-47.</b> Facilities are subject to limitations regarding the location of new, existing, or lateral expansions of MSWLFs within 10,000 ft (3048 m) of any airport runway end used by turbojet aircraft or within 5000 ft (1524 m) of any airport runway end used by only piston-type aircraft (40 CFR 258.10(a) through 258.10(c) and 258.16).</p> <p><b>7-48.</b> Facilities are subject to limitations regarding the location of new, existing, and lateral expansions of MSWLFs in 100 yr floodplains (40 CFR 258.11(a) and 258.16).</p>	<p>(NOTE: Please see Appendix 7-2 for a list of MSWLFs that are exempt from meeting the standards found in 40 CFR 258, except for the standards for final cover in 40 CFR 258.60(a), see checklist item 7-77. See Appendix 7-1 for a list of compliance dates for nonexempt MSWLFs.)</p> <p>Verify that the facility has demonstrated that the MSWLF is designed and operated so as to not pose a bird hazard to aircraft.</p> <p>Verify that the facility has notified the Federal Aviation Administration (FAA) and the affected airport as to the presence of the MSWLF.</p> <p>Verify that the demonstration has been placed in the operating record and the state Director has been notified that it has been placed in the operating record.</p> <p>Verify that existing MSWLF units that cannot make this demonstration, are closed by 9 October 1996, unless a delay is approved by the Director.</p> <p>Verify that the facility has demonstrated that the MSWLF will not restrict the flow of the 100 yr flood, reduce the temporary water storage capacity of the floodplain, or result in a washout of solid waste.</p> <p>Verify that existing MSWLF units that cannot make this demonstration, are closed by 9 October 1996, unless a delay is approved by the Director.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-49.</b> Facilities are required to comply with limitations regarding the location of new MSWLFs and lateral expansions in wetland (40 CFR 258.12(a)(1) through 258.12(a)(3) and 258.16).</p>	<p>Verify that, if the facility is planning to place a MSWLF or a lateral expansion in a wetlands, it has demonstrated to the Director that the construction of the MSWLF will not:</p> <ul style="list-style-type: none"> <li>- cause or contribute to violations of any applicable state water quality standard</li> <li>- violate any applicable toxic effluent standard or prohibition</li> <li>- jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical protected habitat</li> <li>- violate any requirement under the <i>Marine Protection, Research, and Sanctuaries Act of 1973</i></li> <li>- cause or contribute to significant degradation of wetlands.</li> </ul> <p>Verify that the facility has demonstrated the integrity of the MSWLF and its ability to protect ecological resources by addressing the following factors:</p> <ul style="list-style-type: none"> <li>- erosion, stability, and migration potential of native wetland soils, muds, and deposits used to support the MSWLF unit</li> <li>- erosion, stability, and migration potential of dredged and fill materials used to support the MSWLF unit</li> <li>- the volume and chemical nature of the wastes managed in the MSWLF</li> <li>- impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste</li> <li>- the potential effects of catastrophic releases of waste to the wetland and the resulting impacts on the environment</li> <li>- any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected.</li> </ul>
<p><b>7-50.</b> Facilities are subject to limitations regarding the location of new MSWLFs and lateral expansions in fault areas that have had displacement in Holocene time (40 CFR 258.12(a) and 258.16).</p>	<p>Verify that if the facility is planning to construct an MSWLF or lateral expansions within 200 ft (60 m) of a fault that it has demonstrated to the Director that an alternative setback distance of less than 200 ft (60 m) will prevent damage to the structural integrity of the MSWLF unit and will be protective of human health and the environment.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-51.</b> Facilities are subject to limitations regarding the placement of new MSWLFs and lateral expansions in seismic impact zones (40 CFR 258.14(a) and 258.16).</p> <p><b>7-52.</b> Facilities are subject to limitations regarding the location of new, existing, or lateral expansion of MSWLFs in unstable areas (40 CFR 258.15(a) and 258.16).</p>	<p>Verify that, if the facility is planning to construct an MSWLF or lateral expansion in a seismic impact zone, it has demonstrated to the Director that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.</p> <p>Verify that the demonstration has been placed in the operating record and the State Director has been notified that it has been placed in the operating record.</p> <p>Verify that, if the facility has or is planning to construct an MSWLF or lateral expansion in an unstable area, it has demonstrated to the Director that engineering measures have been incorporated into the MSWLF unit's design to ensure that the integrity of the structural components will not be disrupted.</p> <p>Verify that the following criteria, at a minimum, are considered in judging whether or not an area is unstable:</p> <ul style="list-style-type: none"> <li>- onsite or local soil conditions that may result in significant differential settling</li> <li>- onsite or local geologic or geomorphic features</li> <li>- onsite or local human-made features or event (both surface and subsurface).</li> </ul> <p>Verify that the demonstration has been placed in the operating record and the state Director has been notified that it has been placed in the operating record.</p> <p>Verify that existing MSWLF units that cannot make this demonstration, are closed by 9 October 1996, unless a delay is approved by the Director.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MSWLFs</b></p> <p><b>Operating Criteria</b></p> <p><b>7-53.</b> MSWLFs are subject to requirements pertaining to procedures for excluding hazardous wastes from the landfills (40 CFR 258.20(a)).</p> <p><b>7-54.</b> MSWLFs are subject to requirements pertaining to cover materials (40 CFR 258.21).</p> <p><b>7-55.</b> MSWLFs are subject to requirements pertaining to the control of disease vectors (40 CFR 258.22 (a)).</p>	<p>Verify that the MSWLF has a program for detecting and preventing the disposal of regulated hazardous wastes (as defined in 40 CFR 261) and polychlorinated biphenyl (PCB) wastes that includes the following:</p> <ul style="list-style-type: none"> <li>- random inspections of incoming loads, unless other steps are taken to ensure incoming loads do not contain hazardous wastes or PCB wastes</li> <li>- records of any inspections</li> <li>- training of facility personnel to recognize hazardous wastes and PCB wastes</li> <li>- notification to the state Director of authorized states or the USEPA Regional Administrator if a regulated hazardous waste of PCB waste is discovered at the facility.</li> </ul> <p>Verify that all MSWLF units have solid waste covered with 6 in. [15.24 cm] of earthen material, or another approved materials at an alternative thickness, at the end of each operating day, or more frequently, if necessary, in order to control disease vectors, fires, odors, blowing litter, and scavenging.</p> <p>(NOTE: Alternative cover material and thickness must be approved by the appropriate authority; and a temporary waiver may be granted by the appropriate authority under particular extreme climatic conditions.)</p> <p>Verify that at the MSWLF there is prevention or control of onsite populations of disease vectors using techniques appropriate for the protection of human health and the environment.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-56.</b> MSWLFs are subject to specific requirements pertaining to the production and monitoring of methane gases (40 CFR 258.23(a) and 258.23 (b)).</p>	<p>Verify that at the MSWLF the concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane in facility structures (excluding gas control or recovery system components).</p> <p>Verify the concentration of methane gas at the facility property boundary does not exceed the lower explosive limit for methane.</p> <p>Verify that the MSWLF implements a routine methane monitoring program according to the following factors:</p> <ul style="list-style-type: none"> <li>- the type and frequency of monitoring is based on: <ul style="list-style-type: none"> <li>- soil conditions</li> <li>- hydrogeological conditions surrounding the facility</li> <li>- hydraulic conditions surrounding the facility</li> </ul> </li> <li>- locations of facility structures and property boundaries.</li> </ul> <p>Verify that monitoring occurs quarterly, at a minimum.</p>
<p><b>7-57.</b> MSWLFs are subject to notification criteria pertaining to excessive methane gas releases (40 CFR 258.23(c)).</p>	<p>Verify that, if methane gas monitoring detect levels of gas exceeding the allowed limits, the following notification measures are taken:</p> <ul style="list-style-type: none"> <li>- all necessary steps are taken to ensure protection of human health</li> <li>- the Director is notified of the protective measures</li> <li>- within 7 days of detection, the level of methane gas detected and the steps taken to protect human health is noted in the operating record</li> <li>- within 60 days of detection, a remediation plan for the methane gas releases is placed in the operating record, and the Director is notified that the plan has been implemented.</li> </ul> <p>(NOTE: The Director of an approved state may establish alternative schedules for demonstrating compliance with these requirements.)</p>
<p><b>7-58.</b> MSWLFs are required to control emissions (40 CFR 258.24).</p>	<p>Verify that there is no open burning of solid waste, except for the infrequent burning of agricultural wastes, silvicultural wastes, land-clearing debris, diseased trees, or debris from emergency cleanup.</p>
<p><b>7-59.</b> MSWLFs are subject to access limitations (40 CFR 258.25).</p>	<p>Verify that the facility controls public access to the MSWLF and prevents unauthorized vehicular traffic and illegal dumping of wastes through the use of artificial barriers, natural barriers, or both.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>7-60. MSWLFs are subject to surface water control requirements (40 CFR 258.27).</p>	<p>Verify that the MSWLF does not cause a discharge of pollutants into waters of the United States, including wetlands, that causes noncompliance with the <i>Clean Water Act</i> (CWA) or the National Pollution Discharge Elimination System (NPDES) requirements.</p> <p>(NOTE: This includes discharges of a nonpoint source of pollution that violates any approved area-wide or state-wide water quality management plan.)</p>
<p>7-61. The disposal of liquids at MSWLFs is restricted (40 CFR 258.28).</p>	<p>Verify that bulk or noncontainerized liquid waste is not placed in MSWLF unless:</p> <ul style="list-style-type: none"> <li>- the waste is household waste other than septic waste</li> <li>- the liquid waste is in a small container similar in size to that normally found in household waste</li> <li>- the container holding the waste is designed to hold liquids for use other than storage</li> <li>- the waste is leachate or gas condensate derived from the MSWLF (as long as the MSWLF is designed with a composite liner and leachate collection system).</li> </ul> <p>Verify that, if the waste is leachate or gas condensate derived from MSWLFs designed with composite liner and leachate collection system, the facility demonstrates to the Director that the MSWLF is of such a design, and the demonstration is recorded in the operating record.</p>
<p>7-62. MSWLFs are required to maintain records (40 CFR 258.29(a) and 258.29 (c)).</p>	<p>Verify that the following records are retained in an operating record, near the MSWLF, or at an approved alternate location:</p> <ul style="list-style-type: none"> <li>- any location restriction demonstration</li> <li>- inspection records, training procedures, and notification procedures</li> <li>- gas monitoring results from monitoring and any remediation plans</li> <li>- any MSWLF unit design documentation for placement of leachate or gas condensate in MSWLFs</li> <li>- any demonstration, certification, finding, monitoring, testing, or related analytical data</li> <li>- closure and post-closure care plans and any monitoring, testing, or related analytical data</li> <li>- any information demonstrating compliance with small community exemption.</li> </ul> <p>Verify that the facility notifies the Director when the above listed documents have been placed in or added to the operating record.</p>

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**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

7-62. (continued)

(NOTE: The Director of an approved state can set alternative schedules for recordkeeping and notification requirements.)

7-63. MSWLF records are subject to inspection by certain authorities (40 CFR 258.29(b)).

Verify that all information in the operating record is furnished upon request from the Director and is available at all times for inspection by the Director.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MSWLFs</b></p> <p><b>Groundwater Monitoring Criteria</b></p> <p><b>7-64.</b> MSWLFs are required to comply with groundwater monitoring schedules (40 CFR 258.50(c) and 258.50 (e)).</p>	<p>Verify that ground monitoring complies with the following schedule:</p> <ul style="list-style-type: none"> <li>- existing MSWLFs and lateral expansions less than 1 mi [1.61 km] from a drinking water intake (surface or subsurface) must be in compliance with these requirements by 9 October 1996</li> <li>- existing MSWLFs and lateral expansions greater than 1 mi [1.61 km] but less than 2 mi [3.22 km] from a drinking water intake (surface or subsurface) must be in compliance with these groundwater monitoring requirements by 9 October 1995</li> <li>- existing MSWLFs and lateral expansions greater than 2 mi [3.22 km] from a drinking water intake (surface or subsurface) must be in compliance with these groundwater monitoring requirements by 9 October 1996</li> <li>- new MSWLFs must be in compliance with the groundwater monitoring requirements before waste can be placed in the unit.</li> </ul> <p>(NOTE: The Director of an approved state may approve of alternate schedules.)</p> <p>Verify that new MSWLF units, existing MSWLF units, and lateral expansions that dispose of less than 20 tons [18,143.69 kg] of municipal solid waste daily, based on the annual average as long as there is no evidence of groundwater contamination from the MSWLF unit and the MSWLF unit serves either of the following and are less than 2 mi [3.22 km] from a drinking water intake (surface or subsurface) comply with groundwater monitoring requirements by 9 October 1995:</p> <ul style="list-style-type: none"> <li>- a community that experiences an annual interruption of at least 3 consecutive months of surface transportation that prevents access to a regional waste management facility</li> <li>- a community that has no practicable waste management alternative and the landfill is located in an area that annually receives less than or equal to 25 in. [62.5 cm] of precipitation.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>7-64. (continued)</b>	<p>Verify that new MSWLF units, existing MSWLF units, and lateral expansions that dispose of less than 20 tons [18,143.69 kg] of municipal solid waste daily, based on the annual average as long as there is no evidence of groundwater contamination from the MSWLF unit and the MSWLF unit serves either of the following and are more than 2 mi [3.22 km] from a drinking water intake (surface or subsurface) comply with groundwater monitoring requirements by 9 October 1996:</p> <ul style="list-style-type: none"> <li>- a community that experiences an annual interruption of at least 3 consecutive months of surface transportation that prevents access to a regional waste management facility</li> <li>- a community that has no practicable waste management alternative and the landfill is located in an area that annually receives less than or equal to 25 in. [62.5 cm] of precipitation.</li> </ul>
<p><b>7-65.</b> MSWLFs that are exempted from groundwater monitoring are required to document the reasons for exemption in the operating record and notify the state Director if contamination does occur (40 CFR 258.1 (f)).</p>	<p>(NOTE: An MSWLF exempted from groundwater monitoring is any new MSWLF units, existing MSWLF units, and lateral expansions that dispose of less than 20 tons of municipal solid waste daily, based on annual average as long as there is no evidence of groundwater contamination from the MSWLF unit and the MSWLF unit serves either:</p> <ul style="list-style-type: none"> <li>- a community that experiences an annual interruption of at least 3 consecutive months of surface transportation that prevents access to a regional waste management facility</li> <li>- a community that has no practicable waste management alternative and the landfill is located in an area that annually receives less than or equal to 25 in. of precipitation.)</li> </ul> <p>Verify that the operating record indicates the reason for exemption.</p> <p>Verify that the owner or operator of the MSWLF exempt from groundwater monitoring notifies the state Director if they become aware of groundwater contamination and starts a groundwater monitoring program.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-66.</b> Groundwater monitoring systems at MSWLFs are subject to requirements (40 CFR 258.51(a), 258.51(c), and 258.51(d)(2)).</p>	<p>Verify that the groundwater monitoring system complies with the following requirements:</p> <ul style="list-style-type: none"> <li>- it consists of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer</li> <li>- it represents the quality of background groundwater that has not been affected by leakage from an MSWLF</li> <li>- it represents the quality of groundwater passing the relevant point of compliance specified by the Director or at the waste management unit boundary</li> <li>- monitoring wells are cased in a manner that maintains the integrity of the monitoring well bore hole</li> <li>- it is certified by a qualified groundwater scientist or approved by the Director (within 14 days of this certification, the owner or operator has notified the Director that certification has been placed in the operating record).</li> </ul> <p>(NOTE: When physical obstacles preclude installation of groundwater monitoring wells at the relevant point of compliance at existing units, the downgradient monitoring system may be installed at the closest practicable distance hydraulically downgradient from the relevant point of compliance specified by the Director.)</p>
<p><b>7-67.</b> Groundwater sampling and analysis at MSWLFs is subject to requirements (40 CFR 258.53(a) and 258.53(c) through 258.53(g)).</p>	<p>Verify that groundwater monitoring sampling and analysis procedures are designed to ensure monitoring results provide an accurate representation of groundwater quality at the background and downgradient well.</p> <p>Verify that the sampling procedures and frequency are protective of human health and the environment.</p> <p>Verify that groundwater elevations are measured in each well immediately prior to purging, and that the facility has determined the rate and direction of groundwater flow each time groundwater is sampled.</p> <p>Verify that groundwater elevations in wells which monitor the same waste management area are measured within a period of time short enough to avoid temporal variation in groundwater flow that could preclude accurate determination of groundwater flow rate and direction.</p> <p>Verify that the facility has established a background groundwater quality in a hydraulically upgradient or background well for each of the monitoring parameters or constituents required by its monitoring program.</p> <p>Verify that the number of samples collected to establish groundwater quality data is consistent with the approved statistical procedures.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>7-67. (continued)</b>	<p>Verify that the facility specifies in the operating manual one of the following statistical methods to be used in evaluating groundwater monitoring data for each hazardous constituent:</p> <ul style="list-style-type: none"> <li>- an analysis of variance</li> <li>- a tolerance or prediction interval procedure</li> <li>- a control chart approach</li> <li>- an equivalent statistical test method.</li> </ul>
<p><b>7-68.</b> Detection monitoring at MSWLFs is subject to specific requirements (40 CFR 258.54(a) and 258.54 (b)).</p>	<p>Verify that, at a minimum, a detection monitoring program, includes the constituents listed in Appendix 7-3.</p> <p>Verify that monitoring occurs at least semiannually during the active life of the facility (including closure) and during the post-closure period.</p> <p>Verify that a minimum of four independent samples from each well (background and downgradient) are collected and analyzed for the constituents listed in Appendix 7-3 during the first semiannual sampling event.</p> <p>Verify that at least one sample from each well (background and downgradient) is collected and analyzed during subsequent semiannual sampling events.</p> <p>(NOTE: The Director of an approved state may delete some constituents and establish an alternate test.)</p>
<p><b>7-69.</b> MSWLFs are subject to requirements pertaining to the detection of groundwater contamination (40 CFR 258.54(c)).</p>	<p>Verify that in the event that there is a statistically significant increase over background for one or more of the constituents listed in Appendix 7-3, the following steps are taken:</p> <ul style="list-style-type: none"> <li>- within 14 days of the finding, the facility places a notice in the operating record indicating which constituents have shown statistically significant change from background levels</li> <li>- the Director is notified that the finding has been placed in the operating record</li> <li>- within 90 days an assessment monitoring program is established.</li> </ul> <p>(NOTE: The facility may demonstrate that a source other than the MSWLF caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This demonstration report must be certified by a qualified groundwater scientist or approved by the Director and be placed in the operating record.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-70.</b> MSWLFs are subject to requirements pertaining to assessment monitoring programs (40 CFR 258.55(a) through 258.55(c)).</p>	<p>Verify that an assessment monitoring program is established whenever a statistically significant increase over background has been detected for one or more of the constituents listed in Appendix 7-3.</p> <p>Verify that within 90 days of establishing an assessment monitoring program, and annually thereafter, the facility samples and analyzes the groundwater for all constituents identified in Appendix 7-4.</p> <p>Verify that a minimum of one sample from each downgradient well is collected and analyzed during each sampling event.</p> <p>Verify that, for any constituent detected in the downgradient wells as a result of the complete Appendix 7-4 analysis, a minimum of four independent samples from each well (background and downgradient) is collected and analyzed to establish background for the constituents.</p> <p>(NOTE: The Director of an approved state may specify an appropriate alternate frequency for repeated sampling and analysis for the full set of constituents during the active life (including closure) and postclosure care of the unit.)</p>
<p><b>7-71.</b> MSWLFs are subject to notification requirements pertaining to assessment monitoring (40 CFR 258.55(d) and 258.55(e)).</p>	<p>Verify that, after obtaining the results from the initial or subsequent sampling events required, the following steps are taken:</p> <ul style="list-style-type: none"> <li>- within 14 days, a notice is placed in the operating record identifying the Appendix 7-4 constituents that have been detected</li> <li>- the Director is notified that the notice has been placed in the record</li> <li>- within 90 days, and on at least a semiannual basis thereafter, the background and downgradient monitoring wells are resampled, and analyses conducted for all constituents in Appendix 7-3 and for those constituents in Appendix 7-4 that are detected in the assessment monitoring program</li> <li>- the results of these analyses are placed in the operating record</li> <li>- at least one sample from each well (background and downgradient) is collected and analyzed during these sampling events.</li> </ul> <p>(NOTE: The Director of an approved state may specify an alternate monitoring frequency.)</p> <p>Verify that, if the concentrations of all Appendix 7-4 constituents are shown to be at or below background values, using an approved statistical procedure, for two consecutive sampling events, the facility notifies the Director of the finding, and returns to detection monitoring.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-72.</b> MSWLFs are subject to notification requirements pertaining to noncompliance with the groundwater protection standard (40 CFR 258.55(g)).</p>	<p>Verify that, if during detection monitoring, one or more Appendix 7-4 constituents are detected at statistically significant levels above the groundwater protection standards specified according to the following, the Director and all appropriate local government officials are notified, and a notice is placed in the operating record:</p> <ul style="list-style-type: none"> <li>- for constituents that have a maximum contamination level (MCL) listed in the <i>Safe Drinking Water Act</i> (SDWA), use the MCL for that constituent</li> <li>- for constituents that are not included in the SDWA, use the background level established for that constituent in the detection monitoring program</li> <li>- for constituents for which the background level is higher than the MCL identified in the SDWA, use the background concentration.</li> </ul> <p>Verify that the facility also takes the following steps:</p> <ul style="list-style-type: none"> <li>- the nature and extent of the release is investigated by installation of additional monitoring wells</li> <li>- at least one additional monitoring well is installed at the facility boundary in the direction of contamination migration</li> <li>- notification of all persons who own land or reside on land that directly overlies any part of the plume of contamination that has migrated offsite</li> <li>- initiation of an assessment of corrective measures within 90 days.</li> </ul> <p>(NOTE: The facility may demonstrate that a source other than the MSWLF caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This demonstration report must be certified by a qualified groundwater scientist or approved by the Director and placed in the operating record.)</p>
<p><b>7-73.</b> MSWLFs are subject to criteria for assessing potential groundwater remediation actions (40 CFR 258.56).</p>	<p>Verify that within 90 days of finding Appendix 7-4 constituents at significant levels exceeding the groundwater protection standards, an assessment of potential remedial actions is made and includes the following:</p> <ul style="list-style-type: none"> <li>- analysis of effectiveness of potential corrective measures in meeting all the requirements and objectives of the remedy, such as: <ul style="list-style-type: none"> <li>- the performance, reliability, ease of implementation, and potential impacts of potential remedies</li> <li>- the time required to begin and complete the remedy</li> <li>- the cost of the remedy implementation</li> <li>- state and local requirements affecting remediation</li> </ul> </li> <li>- discussion of corrective measures with public or interested parties.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-74.</b> The selection of remedial measures for groundwater contamination is subject to specific criteria (40 CFR 258.57(a) through 258.57(c)).</p>	<p>Verify that corrective measures are selected according to the following criteria:</p> <ul style="list-style-type: none"> <li>- are protective of human health and the environment</li> <li>- attain the groundwater protection standard</li> <li>- control the source(s) of releases so as to reduce or eliminate further release of Appendix 7-4 constituents into the environment</li> <li>- comply with standards for management of wastes</li> <li>- and, the following evaluation factors are considered: <ul style="list-style-type: none"> <li>- long- and short-term practicability, effectiveness, protectiveness, and reliability</li> <li>- magnitude of reduction of existing risks</li> <li>- magnitude of residual risks in terms of further releases of wastes following remediation</li> <li>- type and degree of long-term management (including monitoring, operation, and maintenance)</li> <li>- short-term risks to community, workers, or the environment during implementation</li> </ul> </li> <li>- time period until full remediation.</li> </ul> <p>Verify that the facility has notified the Director within 14 days of selecting a remedy, and that the selection and the reason for its selection are noted in the operating record.</p> <p>Verify that remedial activities take place within a reasonable period of time.</p>
<p><b>7-75.</b> Groundwater remediation activities are required to meet specific scheduling requirements (40 CFR 258.57(d)).</p>	<p>Verify that the initiation of remedial activities occurs within a reasonable period of time, depending on:</p> <ul style="list-style-type: none"> <li>- extent and nature of contamination</li> <li>- practical capabilities of remedial technologies</li> <li>- availability of treatment or disposal capacity for wastes managed during the implementation period</li> <li>- desirability of utilizing technologies not currently available, but that may offer significant advantages over existing methods</li> <li>- potential risks to human health and the environment</li> <li>- resource value of the aquifer involved</li> <li>- practicable capability of the facility.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>7-76. Facilities are required to implement corrective action programs according to specific parameters (40 CFR 258.58(a) through 258.58(d)).</p>	<p>Verify that, based on the established schedule for initiation and completion of activities, the facility:</p> <ul style="list-style-type: none"> <li>- establishes and implements a corrective action groundwater monitoring program that: <ul style="list-style-type: none"> <li>- at a minimum meets the assessment monitoring requirements of 40 CFR 258.55 (see checklist items 7-70 through 7-72)</li> <li>- indicates the effectiveness of the selected corrective action remedy</li> <li>- demonstrates compliance with groundwater protection standards</li> <li>- implements to selected corrective action program</li> <li>- takes any interim measure necessary to ensure the protection of human health and the environment.</li> </ul> </li> </ul> <p>Verify that, if the facility determines that compliance is not being achieved with the selected remedy, it selects another method or technique that can practicably achieve compliance.</p> <p>Verify that, if compliance cannot be practicably achieved with currently available methods, the facility:</p> <ul style="list-style-type: none"> <li>- obtains certification of a qualified groundwater scientist or approval of a Director of an approved state substantiating this claim</li> <li>- implements alternate measures to control exposure of humans or the environment to residual contamination as necessary to protect human health and the environment</li> <li>- implements alternate measures for control of the sources of contamination, or for removal of decontamination of equipment, units, devices, or structures that are: <ul style="list-style-type: none"> <li>- technically practicable</li> <li>- consistent with the overall objective of the remedy</li> </ul> </li> <li>- notifies the state Director within 14 days that a report justifying the alternative measures prior to implementation has been placed in the operating record.</li> </ul> <p>Verify that all solid wastes that are managed in relation to a remedy or an interim measure are managed as follows:</p> <ul style="list-style-type: none"> <li>- in a manner that is protective of human health and the environment</li> <li>- in a manner that complies with applicable RCRA requirements.</li> </ul>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MSWLFs</b></p> <p><b>Closure Criteria</b></p> <p><b>7-77.</b> MSWLFs are subject to specific final cover design requirements (40 CFR 258.60(a) and 258.60 (b)).</p> <p><b>7-78.</b> MSWLFs are subject to specific closure plan requirements (40 CFR 258.60(c)).</p> <p><b>7-79.</b> MSWLFs are subject to specific closure notification requirements (40 CFR 258.60(d)).</p>	<p>Determine if the facility has plans to close an MSWLF.</p> <p>Verify that the final cover is designed to minimize infiltration and erosion, according to the following criteria:</p> <ul style="list-style-type: none"> <li>- it has a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than <math>1 \times 10^{-4}</math> cm/s, whichever is less</li> <li>- it minimizes infiltrations through the closed MSWLF by use of an infiltration layer that contains a minimum 18 in. [45 cm] of earthen material</li> <li>- it minimizes erosion of the final cover by the use of an erosion layer that contains a minimum 6 in. [15 cm] of earthen material that is capable of sustaining native plant growth.</li> </ul> <p>(NOTE: The Director of an approved state may approve alternate final cover design.)</p> <p>Verify that the facility has prepared a written closure plan that includes the following information:</p> <ul style="list-style-type: none"> <li>- a description of the final cover, and methods and procedures to be used to install the cover</li> <li>- an estimate of the largest area of the MSWLF unit ever requiring a final cover any time during its active life</li> <li>- an estimate of the maximum inventory of wastes ever onsite over its active life</li> <li>- a schedule for completing all activities necessary to satisfy closure requirements.</li> </ul> <p>Verify that the facility has notified the Director of the intent to close the MSWLF.</p> <p>Verify that the notice of intent to close has been placed in the operating record.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-80.</b> MSWLFs are subject to specific closure criteria (40 CFR 258.60(f) and 258.60 (g)).</p> <p><b>7-81.</b> MSWLFs are subject to specific post-closure notification requirements (40 CFR 258.60(h)).</p>	<p>Verify that the facility begins closure activities no later than 30 days after the date the MSWLF receives the final receipt of waste, or no later than 1 yr after the most recent receipt of waste (if the unit has remaining capacity).</p> <p>Verify that the facility completes closure activities of each MSWLF unit within 180 days following the beginning of closure.</p> <p>Verify that the facility notifies the Director that a certification signed by an independent registered professional engineer has been completed and placed in the operating record.</p> <p>Verify that the facility records a notation on the deed to the landfill facility property, (or equivalent instrument examined in a title search), that the property has been used as a landfill, and its use is restricted.</p> <p>Verify that the notation is placed in the operating records, and the Director is notified of its placement.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MSWLFs</b></p> <p><b>Postclosure Care Requirements</b></p> <p><b>7-82.</b> MSWLFs are subject to specific postclosure care requirements (40 CFR 258.61(a)).</p> <p><b>7-83.</b> MSWLFs are subject to specific postclosure plan criteria (40 CFR 258.61(c) and 258.61(d)).</p> <p><b>7-84.</b> MSWLFs are subject to specific postclosure certification requirements (40 CFR 258.61(e)).</p>	<p>Verify that the facility conducts postclosure care of its MSWLFs in the following manner for 30 yr:</p> <ul style="list-style-type: none"> <li>- maintains the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and to prevent run-on and runoff from eroding or otherwise damaging the final cover</li> <li>- maintains and operates the leachate collection system</li> <li>- monitors the groundwater and maintains the groundwater monitoring system</li> <li>- maintains and operates the gas monitoring system.</li> </ul> <p>Verify that the facility has prepared a postclosure plan that includes the following information:</p> <ul style="list-style-type: none"> <li>- a description of the monitoring and maintenance activities</li> <li>- the name, address, and telephone number of the person or office to contact about the facility during the postclosure period</li> <li>- a description of the planned uses of the property during the postclosure period.</li> </ul> <p>Verify that the postclosure plan has been placed in the operating record and the Director has been notified of its placement.</p> <p>Verify that following completion of the postclosure care period, a certification signed by an independent registered professional engineer is completed, placed in the operating record, and the Director is notified of its placement.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MSWLFs</b></p> <p><b>Design Criteria</b></p> <p><b>7-85.</b> New MSWLFs and lateral expansions are required to meet specific design criteria (40 CFR 258.40(a)).</p> <p><b>7-86.</b> Run-on/runoff control systems at MSWLFs are required to meet specific design requirements (40 CFR 258.26).</p>	<p>Verify that the MSWLF is of an approved design that ensures that the concentration values listed in Appendix 7-5 are not exceeded in the uppermost aquifer at the relevant point of compliance.</p> <p>Verify that the MSWLF has a composite liner and a leachate collection system that is designed and constructed to maintain less than a 30 cm [11.8 in.] depth of leachate over the liner.</p> <p>Verify that the run-on control system is designed and maintained to prevent flow onto the active portion of the landfill during the peak discharge from a 25-yr storm.</p> <p>Verify that the runoff control system from the active portion of the landfill is designed and maintained to collect and control at least the water volume resulting from a 24-h, 25-yr storm.</p> <p>Verify the runoff does not cause a discharge of pollutants into waters of the United States, including wetlands, that causes noncompliance with the CWA or NPDES requirements.</p>



**COMPLIANCE CATEGORY:  
SOLID WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>MEDICAL WASTE</b></p> <p><b>7-87.</b> Contaminated reusable sharps are required to be placed in containers which meet specific requirements as soon as possible after use until properly reprocessed (29 CFR 1910.1030(d)(2)(viii) and 1910.1030(d)(4)(ii) (E)).</p> <p><b>7-88.</b> Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping, and specific labeling and handling requirements followed (29 CFR 1910.1030 (d)(2)(xiii)).</p> <p><b>7-89.</b> Contaminated sharps are to be discarded immediately in containers meeting specific requirements (29 CFR 1910.1030 (d)(4)(iii)(A)).</p>	<p>Verify that contaminated reusable sharps are placed in containers that are:</p> <ul style="list-style-type: none"> <li>- puncture resistant</li> <li>- labeled or color coded</li> <li>- leakproof on the sides and bottom.</li> </ul> <p>Verify that reusable sharps that are contaminated with blood or other potentially infectious materials are not stored or processed in a manner that required employees to reach by hand into the containers.</p> <p>Verify that containers are:</p> <ul style="list-style-type: none"> <li>- labeled and color coded</li> <li>- closed prior to being stored, transported, or shipped.</li> </ul> <p>(NOTE: When the facility utilizes Universal Precautions in the handling of all specimens, the labeling/color coding of specimens is not necessary if the containers are recognizable as containing specimens.)</p> <p>Verify that, if outside contamination of the primary container occurs, it is placed in a second container.</p> <p>Verify that, if the specimens could puncture the primary container, the primary container is placed in a secondary container which is puncture resistant.</p> <p>Verify that contaminated sharps are placed in containers that are:</p> <ul style="list-style-type: none"> <li>- closeable</li> <li>- puncture resistant</li> <li>- leakproof on sides and bottoms</li> <li>- labeled or color coded.</li> </ul> <p>Verify that during use, containers for contaminated sharps are:</p> <ul style="list-style-type: none"> <li>- easily accessible</li> <li>- maintained upright throughout use</li> <li>- replaced routinely and not be allowed to overfill.</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>SOLID WASTE MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>7-89. (continued)</b>	<p>Verify that, when the containers of contaminated sharps are being moved from the area of use, the containers:</p> <ul style="list-style-type: none"> <li>- are closed</li> <li>- placed in a secondary container if leakage is possible.</li> </ul> <p>Verify that reusable containers are not opened, emptied, or cleaned manually or handled in any other manner that would expose employees to risk.</p>
<p><b>7-90.</b> Regulated wastes (see definitions) are required to be handled and placed in containers that meet specific standards (29 CFR 1910.1030(d)(4)(iii)(B)).</p>	<p>Verify that regulated wastes are placed in containers that:</p> <ul style="list-style-type: none"> <li>- are closeable</li> <li>- constructed to contain all contents and prevent leakage of fluids</li> <li>- labeled or color coded</li> <li>- closed prior to removal.</li> </ul> <p>(NOTE: Regulated wastes which have been decontaminated need not be labeled or color-coded.)</p> <p>Verify that, if outside contamination of the regulated waste occurs, it is placed in a second container.</p>
<p><b>7-91.</b> All bins, pails, cans, and similar receptacles intended for reuse, that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis (29 CFR 1910.1030(d)(4)(ii)(C)).</p>	<p>Verify that receptacles with the potential for contamination are regularly inspected and decontaminated.</p>

**COMPLIANCE CATEGORY:  
SOLID WASTE MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>7-92.</b> Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood or other potentially infectious materials, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards (29 CFR 1910.1030(g)(1)(i)).</p>	<p>Verify that the labels:</p> <ul style="list-style-type: none"> <li>- include the biohazard symbol</li> <li>- are fluorescent orange or orange-red or predominantly so, with lettering and symbols in contrasting color</li> <li>- are affixed as closely as possible to the container to prevent loss or removal.</li> </ul> <p>(NOTE: Red bags or containers may be used as a substitute for labels.)</p> <p>(NOTE: The following are exempt from labeling requirements:</p> <ul style="list-style-type: none"> <li>- containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use</li> <li>- individual containers of blood or other potentially infectious materials that is placed in a labeled container during storage, transport, shipment, or disposal.)</li> </ul> <p>(NOTE: Regulated waste that has been decontaminated need not be labeled and color coded.)</p>





## **Appendix 7-1**

### **Compliance Dates for MSWLFs and 40 CFR 258 (40 CFR 258.1(e))**

In general, compliance with 40 CFR 258 is required by 9 October 1993. The following is a list of MSWLFs which have had their compliance deadline with 40 CFR 258 extended.

1. 9 April 1994 for existing MSWLF units or a lateral expansion of an existing MSWLF that meet the following conditions:
  - a. the MSWLF unit disposed of 100 tons/day or less of solid waste during a representative period prior to 9 October 1993
  - b. the unit does not dispose of more than an average of 100 tons/day of solid waste each month between 9 October 1993 and 9 April 1994
  - c. the MSWLF is located in a state that has submitted an application for permit program approved by the USEPA by 9 October 1993, is located in the state of Iowa, or is located on Indian Lands or Indian Country
  - d. the MSWLF is not on the national priorities list (NPL).
2. The compliance date has been extended for existing MSWLF unit or lateral expansion if an existing MSWLF unit receiving flood-related waste from the Federally-designated areas within the major disasters declared for the states of Iowa, Illinois, Minnesota, Wisconsin, Missouri, Nebraska, Kansas, North Dakota, and South Dakota by the President during the summer of 1993:
  - a. until 9 April 1994 if the state in which the MSWLF is located has determined that the MSWLF unit is needed to receive flood-related wastes from a Federally designated disaster area
  - b. until 9 October 1994 if the state in which the MSWLF is located has determined that the MSWLF unit is needed to receive flood-related wastes from a Federally designated disaster area
3. 9 October 1995 for new MSWLF units, existing MSWLF units, and lateral expansions that dispose of less than 20 tons of municipal solid waste daily, based on an annual average.



## **Appendix 7-2**

### **MSWLF Units Exempt From Compliance With 40 CFR 258 (40 CFR 258.1(c) and 258.1(d))**

1. MSWLFs that did not receive waste after 9 October 1991.
2. Existing MSWLF units or a lateral expansion of an existing MSWLF that receive waste after 9 October 1991 but stop receiving waste before 9 April 1994 that meet the following conditions:
  - a. the MSWLF unit disposed of 100 tons/day or less of solid waste during a representative period prior to 9 October 1993
  - b. the unit does not dispose of more than an average of 100 tons/day of solid waste each month between 9 October 1993 and 9 April 1994
  - c. the MSWLF is located in a state that has submitted an application for permit program approved by the USEPA by 9 October 1993, is located in the state of Iowa, or is located on Indian Lands or Indian Country
  - d. the MSWLF is not on the NPL.

(NOTE: If these units have not installed a final cover according to the standards in 40 CFR 258.60(a) by 9 October 1994, the unit is required to meet all the requirements found in 40 CFR 258.)

3. Existing MSWLF unit or lateral expansion if an existing MSWLF unit is receiving flood-related waste from the Federally-designated areas within the major disasters declared for the states of Iowa, Illinois, Minnesota, Wisconsin, Missouri, Nebraska, Kansas, North Dakota, and South Dakota by the President during the summer of 1993 and receive waste after 9 October 1991 but stops receiving waste before the date designated by the state.

(NOTE: If these units have not installed a final cover according to the standards in 40 CFR 258.60(a) within 1 yr of the date designated by the state, the unit is required to meet all the requirements in 40 CFR 258.)

4. New MSWLF units, existing MSWLF units, and lateral expansions that dispose of less than 20 tons of municipal solid waste daily, based on an annual average that receive waste after 9 October 1991 but stop receiving waste before 9 October 1995.

(NOTE: If these units have not installed a final cover according to the standards in 40 CFR 258.60(a) by 9 October 1996, the unit is required to meet all the requirements of 40 CFR 258.)

5. MSWLF units that receive waste after 9 October 1991 but stop receiving wastes before 9 October 1993.

(NOTE: If these units have not installed a final cover according to the standards in 40 CFR 258.60(a) by 9 October 1994, the unit is required to meet all the requirements of 40 CFR 258.)



**Appendix 7-3**  
**Consituents for Detection Monitoring<sup>1</sup>**  
**(40 CFR 258, Appendix I)**

<b>Common name<sup>2</sup></b>	<b>CAS RN<sup>3</sup></b>
<i>Inorganic Constituents</i>	
(1) Antimony	(Total)
(2) Arsenic	(Total)
(3) Barium	(Total)
(4) Beryllium	(Total)
(5) Cadmium	(Total)
(6) Chromium	(Total)
(7) Cobalt	(Total)
(8) Copper	(Total)
(9) Lead	(Total)
(10) Nickel	(Total)
(11) Selenium	(Total)
(12) Silver	(Total)
(13) Thallium	(Total)
(14) Vanadium	(Total)
(15) Zinc	(Total)
<i>Organic Constituents</i>	
(16) Acetone	67-64-4
(17) Acrylonitrile	107-13-1
(18) Benzene	71-43-1
(19) Bromochloromethane	74-97-5
(20) Bromodichloromethane	75-27-4
(21) Bromoform; Tribromomethane	75-25-2
(22) Carbon disulfide	75-15-0
(23) Carbon tetrachloride	56-23-5
(24) Chlorobenzene	108-90-7
(25) Chloroethane; Ethyl chloride	75-00-3
(26) Chloroform; Trichloromethane	67-66-3
(27) Dibromochloromethane; Chlorodibromomethane	124-48-1
(28) 1,2-Dibromo-3-chloropropane; DBCP	96-12-8
(29) 1,2-Dibromoethane; Ethylene dibromide	106-93-4
<i>EDB</i>	
(30) o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1
(31) p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7
(32) trans-1,4-Dichloro-2-butene	110-57-6
(33) 1,1-Dichloroethane; Ethylidene chloride	75-34-3

(continued)

### Appendix 7-3 (continued)

Common name <sup>2</sup>	CAS RN <sup>3</sup>
(34) 1,2-Dichloroethane; Ethylene dichloride	107-06-2
(35) 1,1-Dichloroethylene; 1-1-Dichloroethene; Vinylidene chloride	75-35-4
(36) cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2
(37) trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5
(38) 1,2-Dichloropropane; Propylene dichloride	78-87-5
(39) cis-1,3-Dichloropropene	10061-01-5
(40) trans-1,3-Dichloropropene	10061-02-6
(41) Ethylbenzene	100-41-4
(42) 2-hexanone; Methyl butyl ketone	591-78-6
(43) Methyl bromide; Bromomethane	74-83-9
(44) Methyl chloride; Chloromethane	74-87-3
(45) Methylene bromide Dibromomethane	74-95-3
(46) Methylene chloride; Dichloromethane	75-09-2
(47) Methyl ethyl ketone; MEK; 2-Butanone	74-93-3
(48) Methyl iodide; Iodomethane	74-88-4
(49) 4-Methyl-2-pentanone; Methyl isobutyl isobutyl ketone	108-10-1
(50) Styrene	100-42-5
(51) 1,1,1,2-Tetrachloroethane	630-20-6
(52) 1,1,2,2-Tetrachloroethane	79-34-5
(53) Tetrachloroethylene; Tetrachloroethene; Perchloroethylene	127-18-4
(54) Toluene	108-88-3
(55) 1,1,1-Trichloroethane; Methylchloroform	71-55-6
(56) 1,1,2-Trichloroethane	79-00-5
(57) Trichloroethylene; Trichloroethene	79-01-6
(58) Trichlorofluoromethane; CFC-11	75-69-4
(59) 1,2,3-Trichloropropane	96-18-4
(60) Vinyl acetate	108-05-4
(61) Vinyl chloride	75-01-4
(62) Xylenes	1330-20-7

<sup>1</sup> This list contains 47 volatile organics for which possible analytical procedures provided in USEPA Report SW-846, *Test Methods for Evaluating Solid Waste*, third edition, November 1986, as revised December 1987, includes Method 8260; and 15 metals for which SW-846 provides either Method 6010 or a method from the 7000 series of methods.

<sup>2</sup> Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.

<sup>3</sup> Chemical Abstracts Service (CAS) registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.

**Appendix 7-4**  
**List of Hazardous Inorganic and Organic Constituents**  
**(40 CFR 258 Appendix II)**

<b>Common Name</b>	<b>CAS RN</b>	<b>Suggested methods</b>	<b>PQL (mg/L)</b>
Acenaphthene	83-32-9	8100	200
		8270	10
Acenaphthylene	208-96-8	8100	200
		8270	10
Acetone	67-64-1	8260	100
Acetonitrile; Methyl cyanide	75-05-8	8015	100
Acetophenone	98-86-2	8270	10
2-Acetylaminofluorene; 2-AAF	53-96-3	8270	20
Acrolein	107-02-8	8030	5
		8260	200
Aldrin	309-00-2	8080	0.05
		8270	10
Allyl chloride	107-05-1	8010	5
		8260	10
4-Aminobiphenyl	92-67-1	8270	20
Anthracene	120-12-7	8100	200
		8270	10
Antimony	(Total)	6010	300
		7040	2000
		7041	30
Barium	(Total)	6010	20
		7080	1000
Benzene	71-43-2	8020	2
		8021	0.1
		8260	5
Benzo[a]anthracene; Benzanthracene	56-55-3	8100	200
		8270	10
Benzo[b]fluoranthene	205-99-2	8100	200
		8270	10
Benzo[k]fluoranthene	207-08-9	8100	200
		8270	10
Benzo[ghi]perylene	191-24-2	8100	200
		8270	10
Benzo[a]pyrene	50-32-8	8100	200
		8270	10
Benyl alcohol	100-51-5	8270	20

(continued)

# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Beryllium	(Total)	6010	3
		7090	50
		7091	2
alpha-BHC	319-84-6	8080	0.05
		8270	10
beta-BHC	319-85-7	8080	0.05
		8270	20
delta-BHC	319-86-8	8080	0.1
		8270	20
gamma-BHC; Lindane	58-89-9	8080	0.05
		8270	20
Bis(2-chloroethoxy)methane	111-91-1	8110	5
		8270	10
Bis(2-chloroethyl)ether; Dichloroethyl ether	111-44-4	8110	3
		8270	10
Bis-(2-chloro-1-methyl) ether; 2,2-Dichloro-diisopropyl ether; DCIP, See note 7	108-60-1	8110	10
		8270	10
Bis(2-ethylhexyl) phthalate	117-81-7	8060	20
Bromochloromethane; Chlorobromomethane	74-97-5	8021	0.1
		8260	5
Bromodichloromethane; Dibromochloromethane	75-27-4	8010	1
		8021	0.2
		8260	5
Bromoform; Tribromomethane	75-25-2	8010	2
		8021	15
		8260	5
4-Bromophenyl phenyl ether	101-55-3	8110	25
		8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	8060	5
		8270	10
Cadmium	(Total)	6010	40
		7130	50
		7131	1
Carbon disulfide	75-15-0	8260	100
Carbon tetrachloride	56-23-5	8010	1
		8021	0.1
		8260	10
Chlordane	See NOTE 8	8080	0.1
		8270	50
p-Chloroaniline	106-47-8	8270	20

(continued)



# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Chlorobenzene	108-90-7	8010	2
		8020	2
		8021	0.1
		8260	5
Chlorobenzilate	510-15-6	8270	10
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	59-50-7	8040	5
		8270	20
Chloroethane; Ethyl chloride	75-00-3	8010	5
		8021	1
		8260	5
Chloroform; Trichloromethane	67-66-3	8010	0.5
		8021	0.2
		8260	5
2-Chloronaphthalene	91-58-7	8120	10
		8270	10
2-Chlorophenol	95-57-8	8040	5
		8720	10
4-Chlorophenyl phenyl ether	7005-72-3	8110	40
		8270	10
Chloroprene	126-99-8	8010	50
		8260	20
Chromium	(Total)	6010	70
		7190	500
		7191	10
Chrysene	8100	200	
		8270	10
Cobalt	218-01-9	8100	200
		7200	500
		7201	10
Copper	(Total)	6010	60
		7210	200
		7211	10
m-Cresol; 3-methylphenol	108-39-4	8270	10
o-Cresol; 2-methylphenol	95-48-7	8270	10
p-Cresol; 4-methylphenol	106-44-5	8270	10
Cyanide	57-12-5	9010	200
2,4-D; 2,4-Dichlorophenoxyacetic acid	94-75-7	8150	10
4,4-DDD	72-54-8	8080	0.1
		8270	10
4,4-DDE	72-55-9	8080	0.05
		8270	10
4,4-DDT	50-29-3	8080	0.1
		8270	10

(continued)

# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Diallate	2303-16-4	8270	10
aDibenz[a,h]anthracene	53-70-3	8100	200
		8270	10
Dibenzofuran	132-64-9	8270	10
Dibromochloromethane; Chlorodibromomethane	124-48-1	8010	1
		8021	0.3
		8260	5
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	8011	0.1
		8021	30
		8260	25
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	8011	0.1
		8021	10
		8260	5
Di-n-butyl phthalate	84-74-2	8060	5
		8270	10
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	8010	2
		8020	5
		8021	0.5
		8120	10
		8260	5
		8270	10
m-Dichlorobenzene; 1,3-Dichlorobenzene	541-73-1	8010	5
		8020	5
		8021	0.2
		8120	10
		8120	10
		8260	5
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	8010	2
		8020	5
		8021	0.1
		8120	15
		8260	5
		8270	10
3,3-Dichlorobenzidine	91-94-1	8270	20
trans-1,4-Dichloro-2-butene	110-57-6	8260	100
Dichlorodifluoromethane; CFC 12	75-71-8	8021	0.5
		8260	5
1,1-Dichloroethane chloride	75-34-3	8010	1
		8021	0.5
		8260	5

(continued)

# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
1,2-Dichloroethane; Ethylene dichloride	107-06-2	8010	0.5
		8021	0.3
		8260	5
1,1-Dichloroethylene; 1,1-Dichloroethane; Vinylidene chloride	75-35-4	8010	1
		8021	0.5
		8260	5
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	8021	0.2
		8260	5
trans-1,2-Dichloroethylene trans-1,2-Dichloroethene	156-60-5	8010	1
		8021	0.5
		0260	5
2,4-Dichlorophenol	120-83-2	8040	5
		8270	10
2,6-Dichlorophenol	120-83-2	8040	5
1,2-Dichloropropane; Propylene dichloride	78-87-5	8010	
		8021	0.05
		8260	5
1,3-Dichloropropane; Isopropylidene chloride	594-20-7	8021	0.3
		8260	5
2,2-Dichloropropane; Isopropylidene chloride	594-20-7	8021	0.5
		8260	15
1,1-Dichloropropene	563-58-6	8021	0.2
		8260	5
cis-1,3-Dichloropropene	10061-01-5	8010	5
		8260	10
trans-1,3-Dichloropropene	10061-02-6	8010	5
		8260	10
Dieldrin	60-57-1	8080	0.05
		8270	10
Diethyl phthalate	84-66-2	8060	5
		8270	20
0,0-Diethyl 0-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	8141	5
		8270	20
Dimethoate	60-51-5	8141	3
		8270	20
p-(Dimethylamino)azobenzene	60-11-7	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	8270	10
3,3-Dimethylbenzidine	119-93-7	8270	10

(continued)

# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
2,4-Dimethiphenol; m-Xylenol	105-87-9	5	
		8040	5
Dimethyl phthalate	131-11-3	8060	10
		8270	10
m-Dinitrobenzene	99-65-0	8270	20
4,6-Dinitro-o-cresol 4,6-Dinitro-2-methylphenol	534-52-1	8040	150
		8270	50
2,4-Dinitrophenol	51-28-54	8040	150
		8270	50
2,4-Dinitrotoluene	121-14-2	8090	0.2
		8270	10
2,6-Dinitrotoluene	606-20-2	8090	0.1
		8270	10
Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	8150	1
		8270	20
Di-n-octyl phthalate	117-84-0	8060	30
		8270	10
Diphenylamine	122-39-4	8270	10
Disulfoton	298-04-4	8140	2
		8141	0.5
		8270	10
Endosulfan I	959-98-8	8080	0.1
		8270	20
Endosulfan II	33213-65-9	8080	0.05
		8270	20
Endodulfan sulfate	1031-07-8	8080	0.5
		8270	10
Endrin	72-20-8	8080	0.1
		8270	20
Endrin aldehyde	7421-93-4	8080	0.2
		8270	10
Ethylbenzene	100-41-4	8020	2
		8221	0.05
		8260	5
Ethyl methacrylate	97-63-2	8015	5
		8260	10
		8270	10
Ethyl methanesulfonate	62-50-0	8270	20
Famphur	52-85-7	8270	20
Fluoranthene	206-44-0	8100	200
		8270	10
Fluorene	86-73-7	8100	200
		8270	10

(continued)

# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Heptachlor	76-44-8	8080	0.05
		8270	10
Heptachlor epoxide	1024-57-3	8080	1
		8270	10
Hexachlorobenzene	118-74-1	8120	0.5
		8270	10
Hexachlorobutadiene	87-68-3	8120	0.5
		8120	5
		8260	10
		8270	10
Hexachlorocyclopentadiene	77-47-4	8120	5
		8270	10
Hexachloroethane	67-72-1	8120	0.5
		8260	10
		8270	10
Hexachloropropene	188-71-7	8270	10
2-Hexanone; Methyl butyl ketone	591-78-6	8260	50
Indenol(1,2,3-cd)pyrene	193-39-5	8100	200
		8270	10
Isopbutyl alcohol	78-83-1	8015	50
		8240	100
Isodrin	465-73-6	8270	20
		8260	10
Isophorone	78-59-1	8090	60
		8270	10
Isosafrole	78-59-1	8090	60
		8270	10
Isosafrole	120-58-1	8270	10
Kepone	143-50-0	8270	20
Lead	(Total)	6010	400
		7420	1000
		7421	10
Mercury	(Total)	7470	2
Methacrylonitrile	126-98-7	8015	5
		8260	100
Methapyrilene	91-80-5	8270	100
Methoxychlor	72-43-5	8080	2
		8270	10
Methyl bromide; Bromomethane	74-83-9	8010	20
		8021	10
Methyl chloride; Chloromethane	74-87-3	8010	20
		8021	0.3
3-Methylcholanthrene	56-49-5	8270	10

(continued)

# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	8015	10
		8260	100
Methyl iodide; Iodomethane	74-88-4	8010	40
		8260	10
Methyl methacrylate	80-62-6	8015	2
		8260	30
Methyl methanesulfonate	66-27-3	8270	10
2-Methylnaphthalene	91-57-6	8270	10
Methyl parathion; Parathion methyl	298-00-0	8140	0.5
		8141	1
		8270	10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	8015	5
		8260	100
Methylene bromide; Dibromomethane	74-95-3	8010	15
		8021	20
		8260	10
Methylene chloride; Dichloromethane	75-09-2	8010	5
		8021	0.2
		8260	10
Naphthalene	91-20-3	8021	0.5
		8100	200
		8260	5
		8270	10
1,4-Naphthoquinone	130-15-4	8270	10
1-Naphthylamine	134-32-7	8270	10
2-Naphthylamine	91-59-8	8270	10
Nickel	(Total)	6010	150
		7520	400
o-Nitroaniline; 2-Nitroaniline	88-74-4	8270	50
m-Nitroaniline; 3-Nitroaniline	99-09-2	8270	50
p-Nitroaniline; 4-Nitroaniline	100-01-6	8270	20
Nitrobenzene	98-95-3	8090	40
		8270	10
o-Nitrophenol; 2-Nitrophenol	88-75-5	8040	5
		8270	10
p-Nitrophenol; 4-Nitrophenol	100-02-7	8040	10
		8270	50
N-Nitrosodi-n-butylamine	924-16-3	8270	10
N-Nitrosodiethylamine	55-18-5	8270	20
N-Nitrosodimethylamine	62-75-9	8070	2
N-Nitrosodiphenylamine	86-30-6	8070	5
N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine;			

(continued)

# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Di-n-propylnitrosamine	86-30-6	8070	10
N-Nitrosomethylethalamine	10595-95-6	8070	10
N-Nitrosopiperidine	100-75-4	8270	20
N-Nitrosopyrrolidine	930-55-8	8270	40
5-Nitro-o-toluidine	99-55-8	8270	10
Parathion	56-38-2	8141	0.5
		8270	10
Pentachlorobenzene	608-93-5	8270	10
Pentachloronitrobenzene	82-68-8	8270	20
Pentachlorophenol	87-86-5	8040	5
		8270	50
Phenacetin	62-44-2	8270	20
Phenanthrene	85-01-8	8100	200
		8270	10
Phenol	108-95-2	8040	1
p-Phenylenediamine	106-50-3	8270	10
Phorate	298-02-2	8140	2
		8141	0.5
		8270	10
Polychlorinated biphenyls (PCBs); Aroclors	see NOTE 9	8080	50
		8270	200
Pronamide	23950-58-5	8270	10
Propionitrile; Ethyl cyanide	107-12-0	8015	60
		8260	150
Pyrene	129-00-0	8100	200
		8270	10
Safrole	94-59-1	8270	10
Selenium	(Total)	6010	750
		7740	20
		7741	20
Silver	(Total)	6010	70
		7760	100
		7761	10
Silvex; 2,4,5-TP	93-72-1	8150	2
Styrene	100-42-5	8020	1
		8021	0.1
		8260	10
Sulfide	18496-25-8	9030	4000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	8150	2
1,2,4,5-Tetrachlorobenzene	95-94-3	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	8010	5
		8021	0.05
		8260	5

(continued)

# Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
1,1,2,2-Tetrachloroethane	79-34-5	8010	0.5
		8021	0.5
		8260	5
Tetrachloroethylene; Tetrachloroethene; Per-chloroethylene	127-18-8	8010	0.5
		8021	0.5
		8260	5
2,3,4,6-Tetrachlorophenol	58-90-2	8270	10
Thallium	(Total)	6010	40
		7840	1000
		7841	10
Tin	(Total)	6010	40
Toluene	108-88-3	8020	2
		8021	0.1
		8260	5
o-Toluidine	95-53-4	8270	10
Toxaphene	See NOTE 1C	8080	2
1,2,4-Trichlorobenzene	120-82-1	8021	0.3
		8120	0.5
		8260	10
		8270	10
1,1,1-Trichloroethane; Methylchloroform	71-55-6	8010	0.3
		8021	0.3
		8260	5
1,1,2-Trichloroethane	79-00-5	8010	0.3
		8260	5
Trichloroethylene; Trichloroethene	79-01-6	8010	1
		8021	0.2
		8260	5
Trichlorofluoromethane; CFC-11	75-69-4	8010	10
		8021	0.3
		8260	5
2,4,5-Trichlorophenol	95-95-4	8270	10
2,4,6-Trichlorophenol	88-06-2	8040	5
		8270	10
1,2,3-Trichloropropane	96-18-4	8010	10
		8021	5
		8260	15
0,0,0-Triethyl phosphorothioate	126-68-1	8270	10
sym-Trinitrobenzene	99-35-4	8270	10
Vanadium	(Total)	6010	80
		7910	2000
		7911	40

(continued)



## Appendix 7-4 (continued)

Common Name	CAS RN	Suggested methods	PQL (mg/L)
Vinyl acetate	106-05-4	8260	50
Vinyl chloride; Chloroethene	75-01-4	8010	2
		8021	0.4
		8260	10
Xylene (total)	See NOTE 11	8020	5
		8021	0.2
		8260	5
Zinc	(Total)	6010	20
		7950	50
		7951	0.5

### NOTES:

1. The regulatory requirements pertain only to the list of substances; the right hand columns (Methods and Practical Quantitation Limits (PQL)) are given for informational purposes only. See also footnotes 5 and 6.
2. Common names are those widely used in government regulations, scientific publications, and commerce; synonyms exist for many chemicals.
3. CAS registry number. Where "Total" is entered, all species in the groundwater that contain this element are included.
4. CAS index are those used in the 9th Collective Index.
5. Suggested Methods refer to analytical procedure numbers used in USEPA Report SW-846, *Test Methods for Evaluating Solid Waste*, Third edition, November 1986, as revised, December 1987. Analytical details can be found in SW-846 and in documentation on file at the agency. CAUTION: The methods listed are representative SW-846 procedures and may not always be the most suitable method(s) for monitoring an analyte under the regulations.
6. PQLs are the lowest concentrations of analytes in groundwaters that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. PQLs are based on 5 mL samples for volatile organics and 1 L samples for semivolatile organics. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds; PQLs are not a part of the regulation.
7. This substance is often called Bis(2-chloroisopropyl) ether, the name CAS applies to its non-commercial isomer, Propane, 2,2"-oxybis[2-chloro-(CAS RN 39638-32-9).
8. Chlordane: This entry includes alpha-chlordane (CAS RN 5103-71-9), beta-chlordane (CAS RN 5103-74-2), gamma-chlordane (CAS RN 5566-34-7), and constituents of chlordane (CAS RN 57-74-9 and CAS RN 12789-03-6). PQL shown is for technical chlordane. PQLs of specific isomers are about 20 mg/L by method 8270.

(continued)

## Appendix 7-4 (continued)

9. Polychlorinated biphenyls (CAS RN 1336-36-3): This category contains congener chemicals, including constituents of Aroclor 1016 (CAS RN 12674-11-2), Aroclor 1221 (CAS RN 11104-28-2), Aroclor 1232 (CAS RN 11141-16-5), Aroclor 1242 (CAS RN 53469-21-9), Aroclor 1248 (CAS RN 12672-29-6), Aroclor 1254 (CAS RN 11097-69-1), and Aroclor 1260 (CAS RN 11096-82-5). The PQL shown is an average value for PCB congeners.
10. Toxaphene: This entry includes congener chemicals contained in technical toxaphene (CAS RN 8001-35-2), i.e., chlorinated camphene.
11. Xylene (total): This entry includes o-xylene (CAS RN 96-47-6), m-xylene (CAS RN 108-38-3), p-xylene (CAS RN 106-42-3), and unspecified xylenes (dimethylbenzenes) (CAS RN 1330-20-7). PQLs for method 8021 are 0.2 for o-xylene and 0.1 for m- or p-xylene. The PQL for m-xylene is 2.0 mg/L by method 8020 or 8260.

**Appendix 7-5**  
**Design Criteria Concentration Values**  
**(40 CFR 258.40)**

<b>Chemical</b>	<b>MCL (mg/L)</b>
Arsenic	0.50
Barium	1.0
Benzene	0.005
Cadmium	0.01
Carbon tetrachloride	0.005
Chromium (hexavalent)	0.05
2,4-Dichlorophenoxy acetic acid	0.1
1,4-Dichlorobenzene	0.075
1,2-Dichloroethane	0.005
1,1-Dichloroethylene	0.007
Endrin	0.0002
Fluoride	4.0
Lindane	0.004
Lead	0.05
Mercury	0.002
Methoxychlor	0.1
Nitrate	10.0
Selenium	0.01
Silver	0.05
Toxaphene	0.005
1,1,1-Trichloromethane	0.2
Trichloroethylene	0.005
2,4,5-Trichlorophenoxy acetic acid	0.01
Vinyl Chloride	0.002



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>SOLID WASTE MANAGEMENT</b> Fish and Wildlife Service	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> NA    C    RMA	<b>REVIEWER CHECKS:</b>		

**SECTION 8**  
**SPECIAL POLLUTANTS MANAGEMENT**

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## **SECTION 8**

### **SPECIAL POLLUTANTS MANAGEMENT**

#### **A. Applicability**

This section is used to determine the compliance status of the management activities associated with:

1. polychlorinated biphenyls (PCBs) and in-service and out-of-service PCB items
2. the removal of asbestos from buildings and its ultimate disposal
3. testing for potential radon exposure
4. limiting environmental noise.

#### **B. Federal Legislation**

- *The Noise Control Act of 1972.* This Act, Public Law (PL) 92-574 (42 U.S. Code (USC) 4901-4918), as amended:
  1. establishes a means for effective coordination of Federal research and activities in noise control
  2. authorizes the establishment of Federal noise emission standards for products distributed in commerce
  3. provides information to the public respecting the noise emission and noise reduction characteristics of such products.

The following categories of products which produce noise are covered by this Act:

1. construction equipment
2. transportation equipment (including recreational vehicles and related equipment)
3. any motor or engine (including any equipment of which an engine or motor is an integral part)
4. electrical or electronic equipment.

The following articles are not covered by the Act (42 USC 4902 (3)):

1. any aircraft, aircraft engine, propeller, or appliance
2. any military weapons or equipment designed for combat use
3. any rockets or equipment designed for research, experimental, or developmental work to be performed by the National Aeronautics and Space Administration (NASA)
4. any other machinery or equipment designed for use in experimental work done by or for the Federal Government.

The manufacturer of a product is required to give notice to the prospective user about the level of the noise the product emits, or its effectiveness in reducing noise (42 USC 4907 (b)). Such notice may not be removed from the product or its container (42 USC 4909 (4)). The manufacturer is prohibited to remove or render ineffective any device or element of design incorporated into the product to control noise (42 USC 4909 (2)).

- *Aviation Safety and Noise Abatement Act of 1979.* This Act, PL 96-193 (49 USC Appendix 2103, 2104), as amended, relates to airport noise. Any airport operator may submit to the

Secretary of Transportation a noise exposure map. Such maps shall set forth the noncompatible uses in each area of the map, a description of the projected aircraft operations at such airport, and the ways in which such operations will affect such map (49 USC 2103). Any airport operator who has submitted a noise exposure map and the related information may submit to the Secretary of Transportation a noise compatibility program. This program shall include measures which the operator has taken or proposes for the reduction of existing noncompatible uses and the prevention of the introduction of noncompatible uses within the area covered by the noise exposure map submitted (49 USC Appendix 2104).

- *The Toxic Substances Control Act (TSCA)*. This Act, as last amended in 1986, 15 USC 2601-2671, is the Federal legislation which deals with the control of toxic substances. The Act consists of three subchapters, one of which regulates the control of toxic substances, another governs asbestos hazard emergency response, and another subchapter regulates indoor radon abatement. The policy developed in TSCA on chemical substances is as follows (15 USC 2601(b)):
  1. adequate data should be developed with respect to the effect of chemical substances and mixtures on health and the environment and that the development of such data should be the responsibility of those who manufacture and those who process such chemical substances and mixtures
  2. adequate authority should exist to regulate chemical substances and mixtures which present an unreasonable risk of injury to health or the environment, and to take action regarding chemical substances and mixtures
  3. authority over chemical substances and mixtures should be exercised in such a manner as not to impede unduly or create unnecessary economic barriers to technological innovation while fulfilling the primary purpose of this Act to assure that such innovation and commerce in such chemical substances and mixtures do not present an unreasonable risk of injury to health or the environment.

Upon request by the U.S. Environmental Protection Agency (USEPA), each Federal department and agency is authorized to (15 USC 2625(a)):

1. make its services, personnel, and facilities available (with or without reimbursement) to the USEPA to assist the USEPA in the administration of this Act
2. furnish the USEPA with information, data, estimates, and statistics, and allow the USEPA access to all information in its possession as the USEPA may reasonably determine to be necessary for the administration of this Act.

Under TSCA the national long-term goal of the United States with respect to radon levels in building is that the air within buildings in the United States should be as free of radon as the ambient air outside of buildings (15 USC 2661). The head of each Federal Department or agency that owns a Federal building must conduct a study for the purpose of determining the extent of radon contamination in such buildings. Such study must include, in the case of a Federal building using a nonpublic water source (such as a well or other groundwater), radon contamination of the water. Such a study must be based on design criteria specified by the USEPA (15 USC 2669(a)(c)(e)).

A recent Amendment of TSCA requires the creation of regulations governing lead-based paint activities to ensure that individuals engaged in such activities are properly trained; that training programs are accredited; and that contractors engaged in such activities are certified. As of the publication of this manual, these regulations have not been finalized (15 USC 2681 through 2692).



- ***The Asbestos Hazard Emergency Response Act (AHERA) of 1986.*** This Act, last amended in November 1990, 15 USC 2641-2656, et. al., and 20 USC 4014, et. al., is the Federal legislation which governs the control and abatement of asbestos hazard present in school buildings. The purpose of this Act is (15 USC 2641(b)):
  1. to provide for the establishment of Federal regulations which require inspection for ACM and implementation of appropriate response actions with respect to ACM in the Nation's schools in a safe and complete manner
  2. to mandate safe and complete periodic reinspection of school buildings following response actions, where appropriate
  3. to require the USEPA to conduct a study to find out the extent of the danger to human health posed by asbestos in public and commercial buildings and the means to respond to any such danger.
- ***The Hazardous Materials Transportation Act.*** This Act was amended in 1978 to regulate the transport of asbestos materials. The regulations are contained in 49 CFR 172-177. In particular, 49 CFR 177 requires that asbestos must be loaded, handled, and unloaded in a manner that will minimize occupational exposure to airborne asbestos. Asbestos wastes which are transported for disposal at a landfills or other disposal facilities must meet all applicable requirements.
- ***Executive Order (EO) 12088.*** This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities it funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

### **C. State/Local Regulations**

- ***Noise*** - State, regional, and local governmental agencies may develop zoning and planning ordinances which have the potential to effect FWS facilities and their operations. As a general rule, states tend to treat environmental noise as a source specific pollutant whose emissions will be controlled by the locally effected community.
- ***PCBs*** - According to the general structure of Federal regulatory programs, any state regulations must adopt the Federal regulations as a minimum set of requirements. In some cases, state regulations have been developed which regulate PCBs more stringently than the Federal program.

State PCB regulations may provide additional regulatory requirements beyond the Federal program to address a specific concern or activity sensitive in that state. State regulations may supersede the Federal regulations in areas including the following:

1. PCBs may be regulated as a hazardous waste
2. PCBs may be regulated to a lower concentration. For example, regulated PCBs in one state are defined to be materials and fluids which contain PCBs at a concentration greater than 7 ppm

3. shipments of PCBs may require manifest documents
  4. analysis may be required to quantify the PCB concentration in all PCB items
  5. additional inspections of select PCB items and specific disposal requirements for PCBs and PCB items may also be required
  6. generators of PCBs and PCB items may be required to obtain disposal permits.
- **Asbestos** - Many state and local governments have enacted standards more stringent than the Federal requirements concerning certification of asbestos workers and disposal of asbestos waste. If the facility is engaging in asbestos removal or disposal, contact the appropriate state and local agencies.
  - **Radon** - State and local governments may enact radon control standards.

#### **D. Key Compliance Requirements**

- **Personnel and PCBs** - Certain regulations and practices should be followed to ensure the health of personnel who come in contact with PCBs. These include provision of protective work-clothing, shower facilities, and facilities for washing hands during shift. Airborne contaminations of PCBs should be assessed and certain precautionary practices followed to protect personnel, which include the wearing of respirators if contamination is above a certain level. Certain records and practices should be maintained for employees exposed to PCBs, including medical histories and physical examinations emphasizing liver and skin condition.
- **PCB Equipment Marking** - The following equipment is required to be marked indicating that they contain PCBs (40 CFR 761.40 and 761.45):
  1. PCB Containers with PCBs in concentrations of 50 to 500 ppm
  2. PCB Transformers (500 ppm or greater)
  3. PCB Large High-Voltage Capacitors
  4. equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High-Voltage Capacitor at the time of removal from service
  5. PCB Large Low-Voltage Capacitors at the time of removal from service
  6. electric motors using PCB coolants with a concentration of 50 to 500 ppm
  7. hydraulic systems using PCB hydraulic fluid with concentrations of 50 to 500 ppm
  8. heat transfer systems (other than PCB Transformers) using PCB concentrations of 50 to 500 ppm
  9. PCB Article Containers containing any of the above
  10. each storage area used to store PCBs and PCB Items for disposal
  11. transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of 50 to 500 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm: mark on each end and side
  12. vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater).
- **Records for PCBs** - A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all facilities that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers, or one or more PCB Transformers. Owners and operators of PCB chemical waste landfills shall keep records on water analy-

sis and operational records, including burial coordinates for 20 yr after disposal has ceased. Storage and disposal facilities for PCBs shall maintain records for 3 yr (40 CFR 761.180(a), 761.180(d), and 761.180(f)).

- **PCB Transformers** - PCB Transformers with PCBs of 500 ppm or greater that are in use or in storage for reuse, must not pose an exposure risk to food and feed and are subject to registration requirements. Combustible materials, including, but not limited to, paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer. PCB transformers are required to be properly serviced, and inspections must be performed once every 3 mo for all in-service transformers. If the transformer is found to be leaking, it must be repaired or replaced to eliminate the source of the leak. When a PCB transformer is involved in a fire, the facility is required to immediately report the incident to the National Response Center (NRC) (40 CFR 761.120(a), 761.120(b), 761.120(c), 761.123(d)(2), and 761.125).
- **PCB Spills** - Facilities are required to report spills of more than 10 lb [4.56 kg] of PCBs of concentrations of 50 ppm to the USEPA regional office. Spills of greater than 1 lb [0.45 kg] must be cleaned up. The criteria for cleanup is based on whether the spill is of high or low concentration of PCBs (40 CFR 761.120, 761.123, and 761.125).
- **PCB Items** - The use of PCBs in electromagnetic switches, voltage regulators, capacitors, heat transfer and hydraulic systems, circuit breakers, reclosers, and cable is allowed if applicable restrictions are met and precautions taken (40 CFR 761.30).
- **PCB Storage** - PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored before disposal must be stored in a facility that will assure the containment of PCBs. Storage prior to disposal is not to exceed 1 yr. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB Contaminated Electric Equipment that have not been drained of freeflowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements. Containers used for the storage of PCBs must comply with the shipping container specification of the Department of Transportation (DOT) (40 CFR 761.65 and ER 1130-2-423).
- **PCB Transportation** - A generator who offers a PCB waste for transport to commercial off-site storage or offsite disposal must prepare a manifest. If the generator does not receive a signed copy of the manifest within 35 days from the date the waste was accepted by the initial transporter, the generator must immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB waste (40 CFR 761.207 through 761.210 and 761.215).
- **PCB Disposal** - For each shipment of manifested PCB waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal. PCB contaminated fluids of concentrations greater than 50 ppm, but less than 500 ppm, are required to be disposed of in a USEPA approved incinerator or chemical waste landfill, or a high efficiency boiler. PCB liquids and Transformers with concentrations of 500 ppm or greater must be disposed of in a USEPA approved PCB incinerator. PCB Capacitors must be disposed of in either a solid waste landfill or an approved incinerator depending on the concentration of PCBs. PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste when drained. PCB-contaminated Electrical Equipment, except capacitors, shall be disposed of

by draining off the free-flowing liquid. PCB Articles and Containers shall be disposed of in a USEPA approved incinerator or chemical waste landfill if all free-flowing liquids have been removed (40 CFR 761.60 and 761.218).

- **Asbestos Identification** - Facility buildings with the potential to be contaminated with asbestos should be tested and surveyed for asbestos and friable materials (GMP).
- **Renovation and Demolition of Asbestos-Containing Structures** - Facilities that demolish structures containing asbestos above certain limits, must meet notification requirements, emission control requirements and wetting requirements. If the concentration of asbestos is less than this level, then the facility must submit notification of demolition. Facilities being demolished under state or local governmental agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation. When a facility is demolished by intentional burning, all regulated asbestos containing materials (RACM) must be removed. No RACM shall be stripped, removed, or otherwise handled or distributed unless at least one onsite representative trained in asbestos removal is present. When air cleaning is used as a method of controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards, unless alternative equipment is authorized for use by the USEPA (40 CFR 61.145 and 61.152).
- **Asbestos Disposal** - Asbestos containing waste must be wetted or bagged to prevent emissions to the air. Asbestos waste has to be disposed of in landfills that have been approved for the acceptance of asbestos containing waste (40 CFR 61.150, 61.151, and 61.154).
- **Asbestos in Schools** - School buildings are required to be inspected for asbestos. An asbestos management plan is required and response action must be done in a timely manner. If there is friable asbestos in the school, there must be an O&M and repair program that limits the asbestos from becoming airborne and exposing personnel. Warning labels will be attached immediately adjacent to any friable and nonfriable asbestos-containing building material (ACBM) and suspected ACBM assumed to be ACM. Staff at the school must receive training on the hazards involved (40 CFR 763).
- **Environmental Noise** - Making continuous or excessive noise at any time or any place by any means is prohibited when it interferes with an authorized use or project purpose. A single facility point of contact should be identified for noise complaints (GMP).

- Radon

#### MITIGATION TIME FRAME

Radon Level (pCi/L) <sup>4</sup>	Mitigate
Greater than 200 <sup>1</sup>	1 mo or move the occupants
200-20 <sup>1</sup>	6 mo
20-8 <sup>2</sup>	1-4 yr <sup>3</sup>
8-4 <sup>2</sup>	5 yr
4 or less <sup>1</sup>	No action required

- <sup>1</sup> Determine by 90-day screen or a 1-yr measurement in the case of Priority 2 and structures.
- <sup>2</sup> Annual average determined by 1-yr measurement. Screening measurements in this range will not be used as the basis for initiating mitigation actions.
- <sup>3</sup> Depending on the level of the measurement.
- <sup>4</sup> pCi = picoCurie; L = liters; mo = months.

- Recordkeeping - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### E. Key Compliance Definitions

- *Active Waste Disposal Site* - any disposal site other than an inactive site (40 CFR 61.14).
- *Adequately Wetted* - sufficiently mixed or penetrated with liquid to prevent the release of particulates (40 CFR 61.14).
- *Asbestos* - substances comprised of or derived from actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite (40 CFR 61.14).
- *Asbestos-Containing Waste Materials* - means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR 141. This term also includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. However, as applied to demolition and renovation operations, this term includes regulated ACM waste and materials contaminated with asbestos including disposable equipment and clothing (40 CFR 61.141).
- *Asbestos Material* - asbestos or any material containing asbestos (40 CFR 61.141).
- *Asbestos Waste from Control Devices* - any waste material that contains asbestos and is collected by a pollution control device (40 CFR 61.141).

- **Capacitor** - a device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by a dielectric. Types of capacitors are as follows (40 CFR 761.3):
  1. **Small Capacitor** - a capacitor which contains less than 1.36 kg (3 lb) of dielectric fluid
  2. **Large High-Voltage Capacitor** - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 V (a.c. or d.c.) or above
  3. **Large Low-Voltage Capacitor** - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 V (a.c. or d.c.).
- **Category I Nonfriable Asbestos-Containing Material (ACM)** - asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos (40 CFR 61.141).
- **Category II Nonfriable ACM** - any material including Category I nonfriable ACM containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure (40 CFR 61.141).
- **Chemical Waste Landfill** - landfill at which protection against risk of injury to health or the environment from mitigation of PCBs to land, water, or the atmosphere is provided from PCBs and PCB Items deposited therein by locating engineering, and operations, the landfill as required (40 CFR 761.3).
- **Commercial Asbestos** - any material containing asbestos that is extracted from ore and has value because of its asbestos content (40 CFR 61.141).
- **Commercial Storer of PCB Waste** - the owner or operator of each facility that is subject to the PCB storage facility standards of 40 CFR 761.65, and who engages in storage activities involving PCB waste generated by others, or PCB waste that was removed while servicing the equipment owned by others and brokered for disposal. The receipt of a fee or any other forms of compensation for services is not necessary to qualify as a commercial storer of PCB waste. It is sufficient under this definition that the facility stores PCB waste generated by others or the facility removed the PCB waste while servicing equipment owned by others. If a facility's storage of PCB waste at no time exceeds 500 gal [1892.71 L] of PCBs, the owner or operator is not required to seek approval as a commercial storer of PCB waste (40 CFR 761.3).
- **Cutting** - to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching (40 CFR 61.141).
- **dBA** - sound level in decibels, measured using the A-weighting network of a sound level meter.
- **dB(C)** - a sound level in decibels, measured using the C-weighting network of a sound level meter.
- **Decibel (dB)** - sound is measured in decibels. The zero on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can hear. Decibels are not linear, but representative points on a sharply rising (exponential) curve.

- ***Demolition*** - the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of a facility (40 CFR 61.141).
- ***Disposal*** - intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items (40 CFR 761.3).
- ***Double Wash/Rinse*** - a minimum requirement to cleanse solid surfaces (both impervious and nonimpervious) two times with an appropriate solvent or other material in which PCBs are at least 5 percent soluble (by weight) (40 CFR 761.123).
- ***Emergency Renovation Operation*** - a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment (40 CFR 61.141).
- ***Emergency Situations*** - for continuing use of a PCB transformer exists when (40 CFR 761.3):
  1. neither a non-PCB transformer nor a non-PCB contaminated transformer is currently in storage for reuse or readily available within 24 h for installation
  2. immediate replacement is necessary to continue service for power users.
- ***Facility Component*** - any part of any facility, including equipment (40 CFR 61.141).
- ***Friable Asbestos Material*** - any material that contains more than 1 percent asbestos by weight and can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure (40 CFR 61.141).
- ***Fugitive Source*** - any source of emissions not controlled by an air pollution control device (40 CFR 61.141).
- ***Glove Bag*** - a sealed compartment with attached inner gloves used for the handling of ACM (40 CFR 61.141).
- ***Good Management Practice*** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- ***High Concentration PCBs*** - PCBs that contain 500 ppm or greater PCBs, or those materials which the USEPA requires to be assumed to contain 500 ppm or greater PCBs in the absence of testing (40 CFR 761.123).
- ***In or Near Commercial Buildings*** - within the interior of, on the roof of, attached to the exterior wall of, in the parking area serving, or within 30 m of a nonindustrial, nonsubstation building (40 CFR 761.3).
- ***In Poor Condition*** - the binding of the materials is losing its integrity as indicated by peeling, cracking, or crumbling of the material (40 CFR 61.141).

- ***Inactive Waste Disposal Site*** - any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic (40 CFR 61.141).
- ***Industrial Building*** - a building directly used in manufacturing or technically productive enterprises (40 CFR 761.3).
- ***Leak or Leaking*** - any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface (40 CFR 761.3).
- ***Low Concentration PCBs*** - PCBs that are tested and found to contain less than 500 ppm PCBs or those PCB-containing materials which USEPA requires to be assumed to be at concentrations below 500 ppm (i.e., untested mineral oil dielectric fluid) (40 CFR 761.123).
- ***Mark*** - the descriptive name, instructions, cautions, or other information applied to PCBs and PCB items, or other objects subject to these regulations (40 CFR 761.3).
- ***Marking*** - the marking of PCB items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of these regulations (40 CFR 761.3).
- ***Mineral Oil PCB Transformers*** - any transformer originally designed to contain mineral oil as the dielectric fluid and which has been tested and found to contain 500 ppm or greater PCBs (40 CFR 761.3).
- ***Non-PCB Transformers*** - any transformer that contains less than 50 ppm PCB except that any transformer that has been converted from a PCB transformer or a PCB-contaminated transformer cannot be classified as a non-PCB transformer until reclassification has occurred in accordance with the requirements of 40 CFR 761.30(a)(2)(v) (40 CFR 761.3).
- ***Non-scheduled Renovation*** - a renovation operation necessitated by the routine failure of equipment, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted (40 CFR 61.141).
- ***Outside Air*** - the air outside buildings and structures, including but not limited to, air under a bridge or an open ferry dock (40 CFR 61.141).
- ***PCB or PCBs*** - an chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance (40 CFR 761.3).
- ***PCB Article*** - any manufactured article, other than a PCB container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. This includes capacitors, transformers, electric motors, pumps, and pipes (40 CFR 761.3).
- ***PCB Article Container*** - any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB articles or PCB equipment, and whose surface(s) has not been in direct contact with PCBs (40 CFR 761.3).



- ***PCB-Contaminated Electrical Equipment*** - any electrical equipment, including but not limited to transformers, capacitors, circuit breakers, reclosers, voltage regulators, switches, electromagnets, and cable, that contain 50 ppm or greater PCB, but less than 500 ppm PCB (40 CFR 761.3).
- ***PCB Equipment*** - any manufactured item, other than a PCB container or a PCB article container, which contains a PCB article or other PCB equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures (40 CFR 761.3).
- ***PCB Item*** - any PCB Article, PCB Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains or has as a part of it any PCB or PCBs (40 CFR 761.3).
- ***PCB Transformer*** - any transformer that contains 500 ppm PCB or greater (40 CFR 761.3).
- ***PCB Waste*** - those PCBs and PCB Items that are subject to the disposal requirements of Subpart D of 761 (40 CFR 761.3).
- ***Particulate Asbestos Material*** - finely divided particles of asbestos or material containing asbestos (40 CFR 61.141).
- ***Planned Renovation Operations*** - a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience (40 CFR 61.141).
- ***Posing an Exposure Risk to Food or Feed*** - being in any location where human food or animal feed products could be exposed to PCBs released from a PCB item (40 CFR 761.3).
- ***Radon-222*** - a naturally occurring, inert, radioactive gas that is formed from the radioactive decay of uranium.
- ***Regulated Asbestos-Containing Material (RACM)*** - includes friable asbestos material; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that has been subjected to grinding, casting, cutting, or abrading; and Category II nonfriable ACM that has a high probability of becoming crumbled, crushed, or pulverized (40 CFR 61.141).
- ***Remove*** - to take out RACM from any structure (40 CFR 61.141).
- ***Renovation*** - altering in any way one or more structure components. Operations in which load-supporting structural members are wrecked or taken out are excluded (40 CFR 61.141).
- ***Retrofill*** - to remove PCB or PCB contaminated dielectric fluid and replace it with either PCB, PCB contaminated, or non-PCB dielectric fluid (40 CFR 761.3).
- ***Rupture of a PCB Transformer*** - a violent or nonviolent break in the integrity of a PCB Transformer caused by an overtemperature and/or overpressure condition that results in the release of PCBs (40 CFR 761.3).

- ***Strip*** - to take off RACM from any part of a facility (40 CFR 61.141).
- ***Structural Member*** - any load-supporting member of a structure, such as beams and load-supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls (40 CFR 61.141).
- ***Visible Emissions*** - any emissions which are visually detectable without the aid of instruments, coming from RACM or asbestos containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed water vapor (40 CFR 61.141).

## **SPECIAL POLLUTANTS MANAGEMENT**

### **GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
All Facilities	8-1 through 8-5	17
PCBs- General	8-6 through 8-10	19
PCB Records	8-11 through 8-13	23
PCB Transformers	8-14 through 8-23	25
PCB Spills	8-24 through 8-26	31
PCB Items	8-27 through 8-30	35
PCBs in Research	8-31	37
PCB Storage	8-32 through 8-37	39
PCB Transportation	8-38 and 8-39	43
PCB Disposal	8-40 through 8-51	45
Asbestos Identification	8-52	51
Renovation and Demolition of Asbestos Containing Structures	8-53 through 8-62	53
Asbestos Disposal	8-63 through 8-66	59
Asbestos in Schools	8-67 through 8-76	63
Radon Gas	8-77 through 8-80	69
Environmental Noise	8-81	71



## **SPECIAL POLLUTANTS MANAGEMENT**

### **Records to Review**

- Inspection, storage, maintenance, and disposal records for PCBs or PCB items
- PCB equipment inventory and sampling results
- Correspondence with regulatory agencies concerning PCB noncompliance situations
- Annual documentation logs
- Asbestos management plan and operating plan
- Notifications to Regulators concerning asbestos disposal
- Records of onsite disposal and transportation and offsite disposal of asbestos
- Regulatory inspection reports
- Documentation of asbestos sampling and analytical results
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Records of asbestos training program
- List of buildings insulated with asbestos or housing ACM
- Record of demolition or renovation projects completed in the past 5 yr that involve friable asbestos
- Decision documents and records of decision
- Noise complaint log

### **Physical Features to Inspect**

- PCB storage areas
- Transformers
- Equipment, fluid, and other items at the facility containing PCBs
- Pipe, spray-on, duct, and troweled cementitious insulation and boiler lagging
- Ceiling and floor tiles
- Piping at hatcheries
- Power generating or other noise
- Emergency generators



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL FACILITIES</b></p> <p>8-1. Actions or changes since previous review of toxic substances management should be examined (GMP).</p> <p>8-2. Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on PCB, Asbestos, Radon Gas, and Noise management should be available at the facility (GMP).</p> <p>8-3. FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>Verify that copies of the following regulations are available and kept current:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards.</i></li> <li>- 40 CFR 61, Subpart M, <i>National Emission Standards for Hazardous Air Pollutants.</i></li> <li>- 40 CFR 761, <i>PCB Manufacturing, Processing, Distribution in Commerce and Use Prohibitions.</i></li> <li>- 40 CFR 763, <i>Asbestos in Schools.</i></li> </ul> <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- definitions of <i>PCB-contaminated</i></li> <li>- PCB storage, labeling, and disposal requirements</li> <li>- certification of individuals sampling and/or working with asbestos</li> <li>- renovation and demolition procedures</li> <li>- asbestos handling and disposal procedures</li> <li>- motor vehicle noise</li> <li>- construction noise</li> <li>- noise from shooting and firing ranges.)</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-4.</b> Facilities will meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if any new regulations concerning PCBs, asbestos, and radon have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>
<p><b>8-5.</b> FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).</p>	<p>Determine if the facility has received an NOV relating to air quality.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCBs</b></p> <p><b>General</b></p> <p>8-6. Certain regulations and practices should be followed to ensure the health of personnel who come in contact with PCBs (GMP).</p> <p>8-7. Airborne contamination of PCBs should be assessed and certain precautionary practices to protect personnel must be followed (GMP).</p> <p>8-8. Certain records and practices should be enacted for employees exposed to PCBs (GMP).</p>	<p>Verify that personnel are instructed to practice the following:</p> <ul style="list-style-type: none"> <li>- wash hands and exposed skin during work shift before: <ul style="list-style-type: none"> <li>- eating</li> <li>- drinking</li> <li>- smoking</li> <li>- using toilet facilities</li> </ul> </li> <li>- shower thoroughly before changing into street clothes.</li> </ul> <p>Verify that protective clothing is provided and worn when working with PCBs:</p> <ul style="list-style-type: none"> <li>- gloves</li> <li>- boots</li> <li>- overshoes</li> <li>- coveralls</li> <li>- safety glasses</li> <li>- face shields.</li> </ul> <p>Determine if measurements are made of air in the workplace to determine if airborne PCB contamination is present.</p> <p>Verify that if the contamination level is at or above 0.5 mg PCB/m<sup>3</sup>:</p> <ul style="list-style-type: none"> <li>- respirators are worn by all personnel</li> <li>- nondisposable equipment and clothing are thoroughly washed before being stored for reuse.</li> </ul> <p>Verify that employees with potential exposure to PCBs are given medical examinations that include:</p> <ul style="list-style-type: none"> <li>- medical history</li> <li>- physical examination emphasizing liver function and skin condition.</li> </ul> <p>Verify that the liver function tests include:</p> <ul style="list-style-type: none"> <li>- serum glutamic oxaloacetic transaminase (SGOT)</li> <li>- serum glutamic pyruvic transaminase (SGPT)</li> <li>- gamma glutamyl transpeptidase (GGTP).</li> </ul> <p>Verify that if respirators are used, each employee is checked annually for ability to work using such equipment.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-8. (continued)</b></p> <p><b>8-9. Certain equipment that contains PCBs must be marked with an M<sub>L</sub> marking (40 CFR 761.40 and 761.45).</b></p>	<p>Verify that records and results of medical examinations are maintained for at least 40 yr after the termination of employment.</p> <p>(NOTE: Marking format: Large PCB Mark (M<sub>L</sub>) letters and striping, on a white or yellow background, sufficiently durable to equal or exceed the life of the PCB Article. The size shall be 15.25 cm (6 in.) on each side. If the article is too small to accommodate this size, a smaller label (M<sub>s</sub>) may be used.)</p> <p>Verify that equipment containing PCBs is marked with an M<sub>L</sub> marking that can be easily read by any person inspecting or servicing the equipment (see Appendix 8-1 for a sample of the marking):</p> <ul style="list-style-type: none"> <li>- PCB Containers with PCBs in concentrations of 50 to 500 ppm</li> <li>- PCB Transformers (500 ppm or greater)</li> <li>- PCB Large High-Voltage Capacitors</li> <li>- equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High-Voltage Capacitor at the time of removal from service</li> <li>- PCB Large Low-Voltage Capacitors at the time of removal from service</li> <li>- electric motors using PCB coolants with a concentration of 50 to 500 ppm</li> <li>- hydraulic systems using PCB hydraulic fluid with concentrations of 50 to 500 ppm</li> <li>- heat transfer systems (other than PCB Transformers) using PCB concentrations of 50 to 500 ppm</li> <li>- PCB Article Containers containing any of the above</li> <li>- each storage area used to store PCBs and PCB items for disposal</li> <li>- transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of 50 to 500 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm are marked on each end and side</li> <li>- vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater).</li> </ul> <p>Verify that if one or more PCB Large High-Voltage Capacitors is installed in a protected location such as a pole, structure, or behind a fence, the pole, structure, or fence is marked and a record or procedure identifying the PCB Capacitor is maintained by the facility.</p> <p>(NOTE: Marking of PCB Contaminated electrical equipment (50 to 500 ppm) is not required.)</p> <p>(NOTE: Appendix 8-2 contains a list of manufacturers that produced PCB contaminated dielectric fluid.)</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-10.</b> Generators, transporters, and disposers of PCB waste are required to have an USEPA identification number. (40 CFR 761.202 through 761.205).</p>	<p>(NOTE: Some facilities are exempt from the notification requirement and do not have a specified PCB storage area as regulated by 40 CFR 761.65 and just temporarily store before they transport for disposal.)</p> <p>Determine if the facility is a generator, transporter, or disposer of PCB waste.</p> <p>Verify that facilities which generate PCB waste have an USEPA identification number before processing, storing, dispensing, transporting, or offering for transport PCB waste.</p> <p>Verify that facilities which transport or disposed of PCB waste have an USEPA identification number.</p> <p>Verify that if a facility must file, Form 7710-53, <i>Notification of PCB Waste Activity</i>, was filed with USEPA by 4 April 1990 and a USEPA identification number was obtained.</p>



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCB RECORDS</b></p> <p><b>8-11.</b> A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all facilities that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater), or 50 or more PCB Large, High-, or Low-Voltage Capacitors (40 CFR 761.180 (a)).</p>	<p>Verify that the annual document log and annual records (manifests certificates of disposal) are kept for at least 5 yr after the facility stops using or storing PCBs and PCB items in the listed quantities.</p> <p>Review the written annual document log for the following:</p> <ul style="list-style-type: none"> <li>- identification of facility</li> <li>- calendar year covered</li> <li>- manifest number for every manifest generated</li> <li>- total number (by type) of PCB Articles, PCB Article Containers, and PCB Containers placed into storage for disposal or disposed of during the calendar year</li> <li>- total weight placed into storage for disposal or disposed of during the calendar year of: <ul style="list-style-type: none"> <li>- PCBs in PCB Articles</li> <li>- contents of PCB Article Container</li> <li>- contents of PCB Containers</li> <li>- bulk PCB Waste</li> </ul> </li> <li>- a list of PCBs and PCB Items remaining in-service at the end of the calendar year. The total weight of any PCBs and PCB Items in containers including identification of container contents and the total number of PCB Transformers, PCB Large, High- and Low-Voltage Capacitors, and the total weight of PCBs in PCB Transformers</li> <li>- a record of each telephone call or other form of verification to confirm the receipt of PCB Waste transported by independent transport.</li> </ul> <p>Verify that the annual document log contains the following for each manifest, for unmanifested waste, and for any PCBs or PCB Items received from or shipped from another facility owned or operated by the generator:</p> <ul style="list-style-type: none"> <li>- date removed from service for disposal (first date material placed in PCB Container)</li> <li>- date placed into transport for offsite storage/disposal</li> <li>- date of disposal (if known)</li> <li>- weight of PCB Wastes <ul style="list-style-type: none"> <li>- total: bulk PCB Wastes</li> <li>- in each article: PCB Transformers or Capacitors</li> <li>- total in each container: PCB Containers</li> <li>- total weight of contents and of the PCB Article (in kilograms) in each PCB Article Container</li> </ul> </li> <li>- serial number or other unique identification number (except for bulk wastes)</li> <li>- description of the contents for PCB Containers and Article Containers.</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-11. (continued)</b></p>	<p>Review the annual record and determine if the following information is provided:</p> <ul style="list-style-type: none"> <li>- all signed manifests generated or received at the facility during the calendar year</li> <li>- all certificates of disposal that have been generated or received during the calendar year.</li> </ul>
<p><b>8-12. Owners and operators of PCB chemical waste landfills shall keep records on water analysis and operational records, including burial coordinates, for 20 yr after disposal has ceased (40 CFR 761.180(d)).</b></p>	<p>Verify that proper records are being kept for the required 20 yr.</p>
<p><b>8-13. Storage and disposal facilities for PCBs shall maintain specific records for 3 yr (40 CFR 761.180(f)).</b></p>	<p>Verify that facilities which store or dispose of PCBs collect and maintain the following records for 3 yr:</p> <ul style="list-style-type: none"> <li>- all documents, correspondence, and data that have been provided by any state or local government</li> <li>- all documents, correspondence, and data provided to the state or local governments by the facility</li> <li>- any applications and related correspondence concerning wastewater discharge permits, solid waste permits, building permits, or other permits and authorizations.</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCB TRANSFORMERS</b></p> <p><b>8-14.</b> Facilities with transformers on their property that do not belong to FWS, should know whether or not the transformers are PCB Transformers (GMP).</p> <p><b>8-15.</b> PCB Transformers with PCBs of 500 ppm or greater that are in use or in storage for reuse shall not pose an exposure risk to food and feed (40 CFR 761.30(a)(1)(i)).</p> <p><b>8-16.</b> PCB Transformers with concentrations of PCBs of 500 ppm or greater are subject to certain registration requirements (40 CFR 761.30(a)(1)(vi)).</p> <p><b>8-17.</b> Railroad transformers must not contain dielectric fluid with greater than 1000 ppm PCB and must be serviced according to specific requirements (40 CFR 761.30(b)(1)(vi), 761.30(b)(2)(iii), and 761.30(b)(2)(iv)).</p>	<p>Determine if the facility has transformers on the property not belonging to the facility.</p> <p>Verify that the facility is aware of the concentration of PCBs in the transformer through either a label on the transformer or documentation from the owners of the transformer.</p> <p>Determine if there are any PCB Transformers on the facility, in use or in storage for reuse, that pose an exposure risk to food and feed, by reviewing the inventory.</p> <p>Verify that all PCB Transformers, including those in storage for reuse, are registered with facility fire department, or the fire department with jurisdiction, with the following information:</p> <ul style="list-style-type: none"> <li>- physical location of PCB Transformer(s)</li> <li>- principle constituent of dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.)</li> <li>- name and telephone number of contact person knowledgeable of PCB Transformer(s).</li> </ul> <p>Verify that railroad transformers do not exceed 1000 ppm PCB.</p> <p>Verify that servicing of a railroad transformer is only done with dielectric fluid containing less than 1000 ppm PCB.</p> <p>Verify that if the coil is removed from the casing of a railroad transformer, it is refilled with dielectric fluid containing 50 ppm or less PCB.</p> <p>(NOTE: Dielectric fluid may be filtered through activated carbon or otherwise industrially processed for the purpose of reducing the PCB concentration in the fluid.)</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-18.</b> Combustible materials, including but not limited to paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer (40 CFR 761.30(a)(1)(viii)).</p> <p><b>8-19.</b> PCB Transformers of concentrations of 500 ppm or greater in use in or near commercial buildings are subject to certain requirements (40 CFR 761.30(a)(1)(ii) through 761.30(a)(1)(v) and 761.30(a)(1)(vii)).</p>	<p>Verify that all combustible materials have been removed from the area within a PCB transformer enclosure (i.e., vault or partitioned area) and the area within 5 m [16.40 ft] of a PCB transformer or PCB transformer enclosure.</p> <p>Determine if there are any transformers located in or near commercial buildings by reviewing the inventory.</p> <p>Verify that procedure/policy exists prohibiting installation of PCB Transformers which have been placed into storage for reuse or which have been removed from another location.</p> <p>Verify that there are no network PCB Transformers with higher secondary voltages (equal to or greater than 430 V, including 480/277 V systems) in or near commercial buildings.</p> <p>Determine where any of the following PCB Transformers are in use in or near commercial buildings or located in sidewalk vaults and if a plan exists to equip such PCB Transformers with electrical protection to avoid transformer failure that would result in release of PCBs:</p> <ul style="list-style-type: none"> <li>- Radial PCB Transformers and lower secondary voltage network PCB Transformers (voltage less than 480 V)</li> <li>- Radial PCB Transformers with higher secondary voltages (greater than or equal to 480 V including 480/277 V system).</li> </ul> <p>Determine if lower secondary voltage network PCB Transformers which have not been electrically protected are registered with the USEPA regional administrator and plans are being made to remove them from service by 1 October 1993.</p> <p>Verify that all higher secondary voltage radial PCB Transformers, in use in or near commercial buildings, and lower secondary voltage network PCB Transformers not located in sidewalk vaults in or near commercial buildings, are equipped with:</p> <ul style="list-style-type: none"> <li>- electrical protection such as current-limiting fuses to avoid transformer ruptures</li> <li>- disconnect equipment to insure complete de-energization of the transformer in case of a sensed abnormal condition.</li> </ul>



<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>8-19. (continued)</b>	<p>Verify that all lower secondary voltage radial PCB Transformers, in use in or near commercial buildings are equipped with electrical protection such as current limiting fuses or equivalent technology and provide for the complete de-energization of the transformer or complete de-energization of the faulted phase of the transformer within several hundredths of a second.</p>
<b>8-20. PCB transformers are required to be properly serviced (40 CFR 761.30(a)(2)).</b>	<p>Verify that servicing activities are properly conducted as follows:</p> <ul style="list-style-type: none"> <li>- transformers classified as PCB-contaminated electrical equipment (50 to 500 ppm PCB) are only serviced with dielectric fluid containing less than 500 ppm PCB</li> <li>- the transformer coil is not removed during servicing of PCB Transformers with PCB concentrations of 500 ppm or greater</li> <li>- PCBs removed during servicing are captured and are either reused as dielectric fluid or disposed of properly</li> <li>- the PCBs from a PCB Transformer with PCB concentrations of 500 ppm or greater are not mixed with or added to dielectric fluid from PCB-contaminated electrical equipment (50 to 500 ppm PCB)</li> <li>- dielectric fluids containing less than 500 ppm PCB that are mixed with fluids containing 500 ppm or greater are not used as dielectric fluid in any transformers classified as PCB-contaminated electrical equipment (50 to 500 ppm PCB).</li> </ul> <p>(NOTE: PCB transformers may be serviced with dielectric fluid at any concentration.)</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-21.</b> Inspections must be performed once every 3 mo for all in-service PCB Transformers with greater than 500 ppm PCB (40 CFR 761.30(a)(1)(ix) and 761.30(a)(1)(xii) through 761.30(a)(1)(xiv)).</p>	<p>Verify that applicable transformers are inspected at least once every 3 mo by reviewing inspection records.</p> <p>Determine whether any PCB Transformers have been leaking.</p> <p>Verify that proper reporting procedures have been followed if any leaking transformers have been discovered.</p> <p>Verify that the following information is recorded for each PCB Transformer inspection:</p> <ul style="list-style-type: none"> <li>- location of transformer</li> <li>- dates of each visual inspection</li> <li>- date when any leak was discovered</li> <li>- name of person conducting inspection</li> <li>- location and estimate of the dielectric fluid quantity for any leaks</li> <li>- data and description of any cleanup, containment, or repair performed</li> <li>- results of any daily inspections for transformers with uncorrected active leaks.</li> </ul> <p>(NOTE: Reduced visual inspections of at least once every 12 mo is allowed for PCB Transformers with impervious, undrained secondary containment capacity of 100 percent of dielectric fluid and for PCB Transformers tested and found to contain less than 60,000 ppm PCBs.)</p> <p>(NOTE: Increased visual inspections of once a week is required for any PCB Transformer in use or stored for reuse which poses an exposure risk to food or feed.)</p> <p>Verify that records of inspection and maintenance are kept for 3 yr after disposal.</p>
<p><b>8-22.</b> PCB Transformers with PCB concentrations of 500 ppm or greater found to be leaking during an inspection must be repaired or replaced to eliminate the source of the leak (40 CFR 761.30(a)(1)(x)).</p>	<p>Determine if cleanup and/or containment of released PCBs has been initiated within 48 h of its detection or as soon as possible.</p> <p>Verify that leaking PCB Transformers are inspected daily.</p> <p>Determine if plans exist to repair or replace transformers to eliminate the source of the leak.</p> <p>Verify that cleaned up material is disposed of according to appropriate requirements.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-23.</b> When a PCB Transformer with concentrations of PCBs 500 ppm or greater is involved in a fire, the facility is required to immediately report the incident to the NRC (40 CFR 761.30(a)(1)(xi)).</p>	<p>Determine if any PCB Transformers have been involved in any incident where sufficient heat and/or pressure was generated to result in the violent or nonviolent rupture of a PCB Transformer and the release of PCBs.</p> <p>Verify that the NRC was notified and the following measures were taken:</p> <ul style="list-style-type: none"> <li>- floor drains were blocked</li> <li>- water runoff was contained.</li> </ul>



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCB SPILLS</b></p> <p>8-24. Facilities are required to report spills of more than 10 lb [4.53 kg] of PCBs of concentrations of 50 ppm or greater (40 CFR 761.120(a)(1), 761.123(d)(2), and 761.125(a)).</p> <p>8-25. Cleanup of low concentration spills of less than 1 lb [0.45 kg] of PCBs (less than 270 gal [1022.26 L] of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120(b), 761.120(c), and 761.125(b)).</p>	<p>Verify that when a spill of 10 lb [4.53 kg] or more directly contaminates surface water, sewers, or drinking water the facility notifies the regional USEPA office within 24 h after discovery of the spill and acts on the guidance given by the USEPA.</p> <p>Verify that if a spill of 10 lb [4.53 kg] or more directly contaminates grazing land or a vegetable garden the facility notifies the USEPA regional office within 24 h after discovery and begins the cleanup of the spill.</p> <p>Verify that when a spill of 10 lb [4.53 kg] or more occurs which does not directly contaminate surface waters, sewers, drinking water supplies, grazing land, or a vegetable garden the facility notifies the USEPA Regional office within 24 h after discovery of the spill and begins decontamination of the spill area.</p> <p>(NOTE: Spills of greater than 1 lb [0.45 kg] must be reported to the NRC under 40 CFR 302.1 through 302.6, see appropriate questions in Hazardous Materials Management.</p> <p>Verify that solid surfaces are double washed/rinsed and all indoor, residential surfaces other than vault areas are cleaned to 10 µg/100 cm<sup>2</sup> by standard commercial wipe tests.</p> <p>Verify that all soil within the spill area (visible traces of soil and buffer of 1 lateral foot [3.28 lateral meters] around the visible traces) is excavated and the ground restored to its original status by backfilling with clean soil (soil with less than 1 ppm PCB).</p> <p>Verify that the above cleanup requirements are done within 48 h after identifying the spill unless an emergency or adverse weather delays the process.</p> <p>Verify that the cleanup is documented with records and certification of decontamination and the records are maintained for 6 yr.</p> <p>(NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable garden.)</p> <p>(NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case by case basis depending on conditions such as possibility of groundwater contamination.)</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>8-26. Cleanup of high-concentration spills and low concentration spills involving 1 lb [0.45 kg] or more of PCBs by weight (270 gal [1022.64 L] or more of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120 (b), 761.120(c), and 761.125(c)).</p>	<p>Verify that the following actions are taken within 24 h (or within 48 h for PCB Transformer with PCB concentrations of greater than 500 ppm) of discovery of the spill:</p> <ul style="list-style-type: none"> <li>- notification of the USEPA regional office and the NRC</li> <li>- the area of the spill is cordoned off or otherwise identified to include the area with visible traces of the spill and a 3 ft [0.91 m] buffer zone. If there are no visible traces the area of the spill may be estimated.</li> <li>- clearly visible signs are placed advising persons to avoid the area</li> <li>- the area of visible contamination is recorded and documented, identifying the extent and center of the spill</li> <li>- cleanup of visible traces of the fluid from hard surfaces is initiated</li> <li>- removal of all visible traces of the spill on soil and other media such as gravel, sand, etc., is started.</li> </ul> <p>Verify that if the spill occurs in an outdoor substation:</p> <ul style="list-style-type: none"> <li>- contaminated solid surfaces are cleaned to a PCB concentration of 100 <math>\mu\text{g}/\text{cm}^2</math> (as measured by standard wipe tests)</li> <li>- soil contaminated by the spill is cleaned to either 25 ppm PCBs by weight or 50 ppm PCBs by choice of the facility if a label to notice is placed in the area indicating the level of cleanup</li> <li>- post-cleanup sampling is done.</li> </ul> <p>Verify that if the spill occurs in a restricted access area other than an outdoor substation:</p> <ul style="list-style-type: none"> <li>- high-contact solid surfaces are cleaned to 10 <math>\mu\text{g}/100 \text{ cm}^2</math> (as measured by standard wipe tests)</li> <li>- low-contact, indoor, impervious solid surfaces are decontaminated to 10 <math>\mu\text{g}/100 \text{ cm}^2</math></li> <li>- low contact, indoor, nonimpervious surfaces are cleaned to either 10 micrograms or 100 <math>\mu\text{g}/100 \text{ cm}^2</math> and encapsulated at the option of the facility</li> <li>- low-contact, outdoor surfaces (both impervious and nonimpervious are cleaned to 100 <math>\mu\text{g}/100 \text{ cm}^2</math></li> <li>- soil contaminated by the spill is cleaned to 25 ppm PCBs by weight</li> <li>- post-cleanup sampling is done.</li> </ul>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
8-26. (continued)	<p>Verify that spills in nonrestricted access locations are decontaminated as follows:</p> <ul style="list-style-type: none"> <li>- furnishings, toys, and other easily replaceable household items are disposed of and replaced</li> <li>- indoor solid surfaces and high-contact outdoor solid surfaces are cleaned to 10 µg/100 cm<sup>2</sup> (as measured by standard wipe tests)</li> <li>- indoor vault areas and low-contact, outdoor, impervious solid surfaces are decontaminated to 10 µg/100 cm<sup>2</sup></li> <li>- at the option of the facility, low-contact, outdoor, nonimpervious solid surfaces are cleaned to either 10 or 100 µg/100 cm<sup>2</sup> and encapsulated</li> <li>- soil is decontaminated to 10 ppm PCBs by weight provided that the soil is excavated to a minimum depth of 10 in. [25.4 cm] and replaced with clean soil</li> <li>- post-cleanup sampling is done.</li> </ul> <p>Verify that records documenting all cleanup and decontamination are maintained for 5 yr.</p> <p>(NOTE: The occurrence/discovery of the spill on the weekend or overtime costs are not considered acceptable reasons to delay response.)</p> <p>(NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable gardens.)</p> <p>(NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case by case basis depending on conditions such as possibility of groundwater contamination.)</p>





**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCB ITEMS</b></p> <p><b>8-27.</b> PCBs may be used in heat transfer and hydraulic systems in a manner other than a totally enclosed manner at concentrations less than 50 ppm if specific requirements are met (40 CFR 761.30(d) through 761.30(e)).</p> <p><b>8-28.</b> Electromagnets, switches, and voltage regulators may contain PCBs at any concentrations if certain requirements are met (40 CFR 761.30(h)).</p> <p><b>8-29.</b> Capacitors may contain PCBs at any concentration subject to certain requirements (40 CFR 761.30(l)).</p>	<p>Determine if testing has been conducted to demonstrate that heat transfer or hydraulic systems that formerly contained PCBs at a concentration greater than 50 ppm now contain less than 50 ppm PCB.</p> <p>Verify that no fluid containing greater than 50 ppm PCB is added to heat transfer or hydraulic systems.</p> <p>Verify that results from analyses, which are performed to demonstrate presence of less than 50 ppm PCB, are retained for confirmation for at least 5 yr.</p> <p>Verify that heat transfer or hydraulic systems are free from leaks of dielectric PCBs.</p> <p>Verify that no electromagnets are used or stored at the facility that contain greater than 500 ppm PCB and pose an exposure risk to food or feed.</p> <p>Verify that electromagnets that contain greater than 500 ppm PCB and which pose an exposure risk to food or feed are inspected at least weekly to determine if they are leaking.</p> <p>Verify that electromagnets, switches, and voltage regulators, that contain 500 ppm or greater PCB, are not rebuilt and no removal or reworking of internal components is done during servicing.</p> <p>Verify that electromagnets, switches, and voltage regulators which contain between 50 and 500 ppm PCB (PCB-Contaminated Electrical Equipment) are only serviced with dielectric fluid which that less than 500 ppm PCB.</p> <p>Verify that PCBs removed or captured are either reused as dielectric fluid or disposed of properly.</p> <p>Verify that dielectric fluid containing a mixture of fluids with less than 500 ppm PCBs are not used as dielectric fluid in any electrical equipment.</p> <p>Verify that all PCB Large, High- and Low-Voltage Capacitors that pose an exposure risk to food and feed have been removed.</p> <p>Verify that all PCB Large, High- and Low-Voltage Capacitors are in use only in restricted-access electrical substations, or in a contained and restricted-access indoor area.</p> <p>Verify that capacitors have been free from leaks of dielectric PCBs.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**8-30.** Circuit breakers, reclosers, and cable may contain PCBs at any concentration for remainder of their useful lives subject to certain conditions. (40 CFR 761.30(m)).

**REVIEWER CHECKS:**

Verify that any circuit breakers, reclosers, and cables used at the facility are serviced using only dielectric fluid which contains less than 50 ppm PCB and have been free from leaks.

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**PCBs IN RESEARCH**

**8-31.** The use of pigments containing PCBs in research or microscopy or in miscellaneous items is subject to certain conditions (40 CFR 761.30(g), 761.30(j), and 761.30(k)).

Verify that pigments used at the facility contain PCBs in concentrations less than 50 ppm.

Verify that pigments are handled in enclosed conditions.



<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>PCB STORAGE</b>  <b>8-32.</b> PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored before disposal must be stored in a facility that will assure the containment of PCBs (40 CFR 761.65(a) through 761.65(b)).	<p>Verify that the following provisions are present by inspecting the PCB storage area:</p> <ul style="list-style-type: none"> <li>- the roof and walls of the building in which the PCBs are stored must be constructed so as to exclude rainfall from contacting PCBs and PCB items</li> <li>- a 6 in. [15.24 cm] tall containment curb circumscribing the entire area in which any PCBs or PCB items are stored. Such curbing shall effectively provide containment for twice the internal volume of the largest PCB Article or 25 percent of the total internal volume of all PCB Articles or Containers stored, whichever is greater</li> <li>- drains, valves, floor drains, expansion joints, sewer lines or other openings that would allow liquids to flow from the curbed area, are not present</li> <li>- floors and curbing are constructed of continuous, smooth, and impervious material</li> <li>- location is not below a 100 yr flood water elevation.</li> </ul> <p>Verify that PCB Articles or PCB Containers are removed from storage and disposed of within 1 yr from the date they were placed in storage.</p>
<b>8-33.</b> PCB Items may also be stored in other areas that do not comply with the storage area requirements when such storage is for a period of less than 30 days and when any such PCB items are marked with the date of removal from service (40 CFR 761.65(c)(1)).	<p>Verify that only the following items are stored and are properly marked in areas used as a 30 day storage area:</p> <ul style="list-style-type: none"> <li>- nonleaking PCB Articles and PCB Equipment</li> <li>- leaking PCB Articles and PCB Equipment placed in a nonleaking PCB Container which contains sufficient sorbent material to absorb liquid contained on the PCB Article or equipment</li> <li>- PCB Containers in which nonliquid PCBs have been placed</li> <li>- PCB Containers in which liquid PCBs at a concentration between 50 to 500 ppm have been placed when containers are marked to indicate less than 500 ppm PCB.</li> </ul> <p>Verify that the area has been included in the facility Spill Prevention, Control, and Countermeasure (SPCC) plan.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>8-34. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB Contaminated Electric Equipment that have not been drained of freeflowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements (40 CFR 761.65(c)(2)).</p>	<p>Determine if available unfilled storage space in the storage area is equal to at least 10 percent of the volume of capacitors and electrical equipment stored outside.</p> <p>Verify that capacitors and equipment stored outside the storage facility are on pallets and inspected at least weekly.</p>
<p>8-35. Specific operational procedures are required at PCB storage areas (40 CFR 761.65(c)(4), 761.65(c)(5), and 761.65(c)(8)).</p>	<p>Verify that the following practices are conducted at any areas where PCBs or PCB Items are stored:</p> <ul style="list-style-type: none"> <li>- movable equipment used for handling PCBs and PCB Items that directly contact PCBs is not removed from storage area unless decontaminated</li> <li>- inspections for leaks of all PCB Articles and PCB Containers in storage are done at least once every 30 days</li> <li>- any leaked PCBs are immediately cleaned up and any spill absorbent material properly disposed</li> <li>- PCB Articles and Containers are marked with the date when placed into storage</li> <li>- PCB Articles and PCB Containers are positioned so that they can be located by the date they were placed into storage</li> <li>- containers in which PCBs are accumulated have a record that includes quantity and date of each batch.</li> </ul>
<p>8-36. Containers used for the storage of PCBs must comply with the shipping container specification of the DOT (40 CFR 761.65(c)(6) and 761.65(c)(7)).</p>	<p>Verify that DOT specifications are on drums/containers. Typical specifications are 5, 5B, 17C.</p> <p>(NOTE: Containers larger than those specified in DOT Specs 5, 5B, or 17C may be used for nonliquid PCBs when such containers will provide as much protection against leaking and exposure to the environment as the DOT specified containers.)</p> <p>Verify that containers used for storage of liquid PCBs are containers without removable heads.</p>

<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>8-36. (continued)</b>	<p>Verify that if the facility uses containers larger than DOT approved containers it has prepared a SPCC plan covering its containers storing PCBs.</p>
<b>8-37. Commercial storers of PCB waste must have final storage approval (40 CFR 761.65(d)).</b>	<p>Determine if the facility is a commercial storer of PCB or has a commercial storer of PCB waste at the facility.</p> <p>Verify that the commercial storer has final storage approval from the USEPA Regional Administrator for PCB waste.</p> <p>(NOTE: Commercial storers were required to file for final storage approval by 2 August 1990. After filing for final approval, they will operate under interim approval until the final decision is made on approval.)</p> <p>(NOTE: The following facilities may be exempt from this requirements for storage approval:</p> <ul style="list-style-type: none"> <li>- storage areas at transfer facilities unless the PCB waste is stored at the facility for more than 10 consecutive days between destinations</li> <li>- storage areas at RCRA-permitted facilities if the facility proves to the Regional Administrator that the facility's existing RCRA closure plan substantially meets the requirements for a TSCA closure plan</li> <li>- storage areas ancillary to a TSCA approved disposal facility if the disposal approval contain an expiration date and the current disposal approval's closure and financial responsibility conditions specifically extend to storage areas ancillary to disposal.)</li> </ul>





**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCB TRANSPORTATION</b></p> <p>8-38. A generator who offers a PCB waste for transport for commercial offsite storage or offsite disposal must prepare a manifest (40 CFR 761.207 through 761.210).</p>	<p>(NOTE: This applies to PCB wastes as defined in 40 CFR 761.3, and that contain greater than 50 ppm PCB unless the concentration was reduced below 500 ppm by dilution.)</p> <p>Verify that a manifest has been prepared when needed and that it contains (use USEPA Form 8700-22):</p> <ul style="list-style-type: none"> <li>- the identity of PCB waste, the earliest date of removal from service for disposal and the weight in kilograms of the waste for bulk load of PCBs</li> <li>- the unique identifying number of each PCB Article Container or PCB Container, the date of removal from service, type of waste, and the weight of PCB waste contained</li> <li>- the serial number if available or other identification for each PCB Article not in a PCB Container or PCB Article Container, the date of removal from service for disposal, and weight in kilograms of the PCB waste in each PCB Article.</li> </ul> <p>Verify that sufficient copies are prepared to supply the generator, the initial transporter, each subsequent transporter, and the owner or operator of the disposal facility with one legible copy each for their records, and one additional copy to be signed and returned to the generator by the owner or operator of the disposal facility.</p> <p>Verify that the generator maintains a copy of the signed manifest for at least 3 yr after receipt of waste by the initial transporter.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

8-39. If the generator does not receive a signed copy of the manifest within 35 days of the date the waste was accepted by the initial transporter, the generator should immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB waste (40 CFR 761.215(a) and 761.215(b)).

**REVIEWER CHECKS:**

Verify that a procedure is in place so that if the generator does not receive a copy within 35 days of the date the waste was accepted by the initial transporter, an Exception Report was filed with the USEPA containing the following information:

- a legible copy of the manifest for which the generator does not have confirmation of delivery
- a cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the PCB waste and the results of those efforts.

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>PCB DISPOSAL</b></p> <p><b>8-40.</b> For each shipment of manifested PCB waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal (COD) (40 CFR 761.218).</p> <p><b>8-41.</b> PCB contaminated fluids other than mineral oil dielectric fluid of concentrations greater than 50 ppm but less than 500 ppm are required to be disposed of according to specific requirements (40 CFR 761.60(a)(3)).</p>	<p>Verify that a COD has been prepared containing the following information:</p> <ul style="list-style-type: none"> <li>- the identity of the disposal facility by: name, address, and USEPA identification number</li> <li>- the identity of the PCB Waste affected by the COD including reference to the manifest number for the shipment</li> <li>- a certification as defined in 40 CFR 761.3.</li> </ul> <p>Verify that a copy of the COD was:</p> <ul style="list-style-type: none"> <li>- sent to the generator identified on the manifest within 30 days of the date that disposal of the PCB waste was completed</li> <li>- retained at the facility with the annual report.</li> </ul> <p>Determine if any PCB fluids meeting these criteria were processed for disposal in the last year.</p> <p>Verify that disposal was done at:</p> <ul style="list-style-type: none"> <li>- a USEPA-approved incinerator</li> <li>- a USEPA-approved chemical waste landfill</li> <li>- a high efficiency boiler.</li> <li>-</li> </ul> <p>Verify that if the fluid is burned in an high efficiency boiler:</p> <ul style="list-style-type: none"> <li>- the boiler is rated at a minimum of 50 million British thermal unit (MBtu)/h [14.65 MW]</li> <li>- the CO concentration in the stack is 50 ppm or less and the excess O<sub>2</sub> is at least 3 percent when PCBs are being burned and the boiler uses natural gas or oil as the primary fuel</li> <li>- the CO concentration in the stack is 100 ppm or less and the O<sub>2</sub> content is at least 3 percent when PCBs are being burned and the boiler uses coal as the primary fuel</li> <li>- the waste does not compromise more than 10 percent (on a volume basis), of the total fuel feed rate</li> <li>- the waste is not fed into the boiler unless the boiler is operating at its normal operating temperature</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-41. (continued)</b></p>	<ul style="list-style-type: none"> <li>- the operator of the boiler does one of the following:               <ul style="list-style-type: none"> <li>- continuously monitors and records the CO concentrations and excess O<sub>2</sub> percentages in the stack gas while burning the waste fluid</li> <li>- measure and records the CO concentration and excess O<sub>2</sub> percentage in the stack gas at regular intervals of no longer than 60 min if the boiler will burn less than 30,000 gal/yr [113,562.36 L/yr] of waste fluid</li> <li>- measures and records the primary fuel feed rates, the waste fluid feed rates, and total quantities of both primary fuel and waste fluid fed to the boiler at regular intervals of no longer than 15 min</li> <li>- checks the CO concentration and the excess O<sub>2</sub> percentage at least once every hour and if either measurement falls below the specified levels, the flow of the waste fluid to the boiler stops immediately.</li> </ul> </li> </ul> <p>Verify that before burning waste fluid, approval has been obtained from the USEPA Regional Administrator.</p> <p>Verify that the following information is obtained by persons burning waste fluid in a boiler and kept at the boiler location for 5 yr:</p> <ul style="list-style-type: none"> <li>- emissions data</li> <li>- the quantity of waste fluid burned in the boiler each month</li> <li>- a waste analysis.</li> </ul> <p>Verify that such PCB fluids were disposed of by an approved method at a properly licensed facility.</p>
<p><b>8-42. PCB liquids greater than 50 ppm must be disposed of in an incinerator which is approved by USEPA to incinerate PCBs (40 CFR 761.60(a)(1)).</b></p>	<p>Verify that all shipments were made to USEPA licensed PCB incinerators by reviewing manifests for a PCB shipments over the past 3 yr.</p> <p>(NOTE: Other disposal provisions apply to:</p> <ul style="list-style-type: none"> <li>- mineral oil dielectric fluid from PCB-Contaminated Electrical Equipment with a concentration greater than 50 ppm but less than 500 ppm</li> <li>- liquids, other than mineral oil dielectric fluids, with PCB concentrations between 50 and 500 ppm</li> <li>- rags, solids, and other debris contaminated with PCB at concentrations greater than 50 ppm</li> <li>- PCB Articles.)</li> </ul>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-43. Mineral oil dielectric fluid from PCB-Contaminated Electrical Equipment</b> containing a PCB concentration greater than 50 ppm but less than 500 ppm is required to be disposed of according to specific methods (40 CFR 761.60(a)(2)).</p>	<p>Verify that mineral oil dielectric fluid as described is disposed of in one of the following ways:</p> <ul style="list-style-type: none"> <li>- an USEPA approved incinerator</li> <li>- an approved chemical waste landfill if written information proves that the fluid is not contaminated at greater than 500 ppm and is not an ignitable waste</li> <li>- an approved high efficiency boiler that is rated at a minimum of 50 MBtu/h [14.65 MW].</li> </ul> <p>Verify that if the fluid is burned in an high efficiency boiler:</p> <ul style="list-style-type: none"> <li>- the boiler is rated at a minimum of 50 MBtu/h [14.65 MW]</li> <li>- the CO concentration in the stack is 10 ppm or less and the excess O<sub>2</sub> is at least 3 percent when PCBs are being burned and the boiler uses natural gas or oil as the primary fuel</li> <li>- the CO concentration in the stack is 100 ppm or less and the O<sub>2</sub> content is at least 3 percent when PCBs are being burned and the boiler uses coal as the primary fuel</li> <li>- the mineral oil dielectric fluid does not compromise more than ten percent (on a volume basis), of the total fuel feed rate.</li> <li>- the mineral oil dielectric fluid is not fed into the boiler unless the boiler is operating at its normal operating temperature</li> <li>- the operator of the boiler does one of the following: <ul style="list-style-type: none"> <li>- continuously monitors and records the CO concentrations and excess O<sub>2</sub> percentages in the stack gas while burning mineral oil dielectric fluid</li> <li>- measure and records the CO concentration and excess O<sub>2</sub> percentage in the stack gas at regular intervals of no longer than 60 min if the boiler will burn less than 30,000 gal [113,562.36 L] of mineral oil dielectric fluid per year</li> <li>- measure and record the primary fuel feed rates, the mineral oil dielectric fluid feed rates, and total quantities of both primary fuel and mineral oil dielectric fluid fed to the boiler at regular intervals of no longer than 15 min</li> <li>- checks the CO concentration and the excess O<sub>2</sub> percentage at least once every hour and if either measurement falls below the specified levels, the flow of the mineral oil dielectric fluid to the boiler stops immediately.</li> </ul> </li> </ul> <p>Verify that 30 days before burning mineral oil dielectric fluid, a written notice of the burning is given to the USEPA Regional Administrator.</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>8-43. (continued)</b>	<p>Verify that the following information is obtained by persons burning mineral oil dielectric fluid in a boiler and kept at the boiler location for 5 yr:</p> <ul style="list-style-type: none"> <li>- emissions data</li> <li>- the quantity of mineral oil dielectric fluid burned in the boiler each month.</li> </ul>
<p><b>8-44.</b> Rags, soils, and other debris contaminated with PCBs at concentrations greater than 50 ppm must be disposed of in a PCB incinerator or in a chemical waste landfill (40 CFR 761.60(a)(4)).</p>	<p>Determine if any contaminated soil or debris has been disposed of, and verify that disposal was conducted at a properly licensed facility.</p>
<p><b>8-45.</b> PCB Transformers with PCB concentrations of 500 ppm or greater shall be disposed of in either a USEPA approved incinerator or a chemical waste landfill (40 CFR 761.60(b)(1)).</p>	<p>Determine if the PCB Transformers are being disposed of at a USEPA-approved incinerator or a chemical waste landfill.</p> <p>Verify that if disposal is being done at a chemical waste landfill the transformer is drained of all free-flowing liquids, filled with solvent, allowed to stand for at least 18 h, and then drained thoroughly.</p>
<p><b>8-46.</b> PCB Capacitors must be disposed of in accordance with certain facility regulations (40 CFR 761.60(b)(2)).</p>	<p>Verify that disposal of PCB Capacitors was done as follows:</p> <ul style="list-style-type: none"> <li>- PCB Small Capacitors (less than 1.36 kg (3 lb) of PCBs) are disposed of in a solid waste landfill</li> <li>- PCB Large, High- or Low-Voltage Capacitors (greater than 1.36 kg (3 lb) of PCBs) containing more than 500 ppm are incinerated in a USEPA approved incinerator.</li> </ul> <p>(NOTE: The Large, High-, or Low-voltage capacitors may be disposed of in a chemical waste landfill upon approval of the USEPA.)</p> <p>Verify that capacitors in storage are placed in DOT containers with absorbent material.</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-47.</b> PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste if specific conditions are met (40 CFR 761.60 (b)(3)).</p>	<p>Verify that the machines are drained of all free-flowing liquid.</p> <p>Verify that if the machine contained PCB liquid of 1000 ppm PCB or greater, it is flushed prior to disposal with a solvent containing less than 50 ppm PCB.</p>
<p><b>8-48.</b> PCB contaminated electrical equipment (50 to 500 ppm PCB), except capacitors, shall be disposed of by draining off the free-flowing liquid (40 CFR 761.60(b)(4)).</p>	<p>Verify that the free-flowing liquid is drained from electrical equipment prior to disposal.</p>
<p><b>8-49.</b> PCB Articles shall be disposed of properly (40 CFR 761.60(b)(5)).</p>	<p>Verify that PCB Articles with concentrations at 500 ppm or greater are disposed of in either:</p> <ul style="list-style-type: none"> <li>- a USEPA-approved incinerator</li> <li>- a chemical waste landfill if all free-flowing liquids have been removed.</li> </ul> <p>Verify that PCB Articles with PCB concentration between 50 and 500 ppm are drained of all free-flowing liquid.</p>
<p><b>8-50.</b> PCB Containers shall be disposed of properly (40 CFR 761.60(c)).</p>	<p>Verify that PCB Containers with concentrations of 500 ppm or greater are disposed of in one of the following ways:</p> <ul style="list-style-type: none"> <li>- in a USEPA-approved incinerator</li> <li>- in a chemical waste landfill if first the container is drained of any liquid PCBs.</li> </ul> <p>Verify that PCB Containers used to contain only PCBs at concentrations less than 500 ppm are drained of PCB liquid prior to disposal as municipal solid waste.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-51.</b> PCB contaminated fluids other than mineral oil dielectric fluid of concentrations greater than 50 ppm but less than 500 ppm shall be disposed of properly (40 CFR 761.60(a)(3)).</p>	<p>Determine if any PCB fluids meeting these criteria were processed for disposal in the last year.</p> <p>Verify that disposal was done at:</p> <ul style="list-style-type: none"> <li>- a USEPA-approved incinerator</li> <li>- a USEPA-approved chemical waste landfill</li> <li>- a high efficiency boiler, if: <ul style="list-style-type: none"> <li>- the boiler is rated at a minimum of 50 MBtu</li> <li>- the boiler uses natural gas or oil.</li> </ul> </li> </ul> <p>Verify that such PCB fluids were disposed of by an approved method at a properly licensed facility.</p>



**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**ASBESTOS  
IDENTIFICATION**

**8-52.** Facilities should be surveyed for the presence of asbestos (GMP).

Verify that the buildings and facility support system have been surveyed for the presence of asbestos.



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RENOVATION AND DEMOLITION OF ASBESTOS CONTAINING STRUCTURES</b></p> <p>8-53. Facilities that demolish structures containing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components, and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of friable asbestos on other facility components and at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components must meet certain notification requirements (40 CFR 61.145(a)(1), 61.145(a)(3), and 61.145(b)).</p>	<p>Determine if the USEPA has been provided with written notice of intent to demolish or renovate at least 10 days before demolition begins and as early as possible before renovation begins.</p> <p>Verify that the written notice contains the following information:</p> <ul style="list-style-type: none"> <li>- name and address of facility</li> <li>- description of facility being renovated or demolished (size, age, prior use)</li> <li>- estimates of approximate amount (linear feet or surface area) of asbestos present in the facility</li> <li>- location of the facility</li> <li>- scheduled start and completion dates of renovation or demolition</li> <li>- nature of planned demolition or renovation methods to be used</li> <li>- procedures for asbestos emissions control</li> <li>- name and location of waste disposal site where asbestos will be disposed)</li> <li>- whether or not it is a revised notification</li> <li>- after 20 November 1991, certification that at least one trained person will supervise.</li> </ul> <p>(NOTE: Facilities are also required to submit notifications following these guidelines for facilities being demolished under an order of a state or local governmental agency because the facility is structurally unsound and in danger of imminent collapse.)</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-54.</b> Facilities demolishing a facility with RACM of less than 80 linear meters (260 linear feet) on pipes and less than 15 m<sup>2</sup> (160 ft<sup>2</sup>) on other facility components and less than 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components are required to submit notification of demolition (40 CFR 61.145(a)(2) and 61.145(b)).</p>	<p>Verify that a written notice of intent to demolish has been submitted to the Administrator at least 10 days before demolition and includes:</p> <ul style="list-style-type: none"> <li>- the name and address of owner and operator</li> <li>- description of the facility being demolished including the size, age, and prior use</li> <li>- estimate of the approximate amount of friable asbestos present</li> <li>- location of the facility</li> <li>- schedule</li> <li>- procedures to be used.</li> </ul>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-55.</b> Facilities that demolish structures which contain at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of friable asbestos on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of friable asbestos on other facility components or 1 m<sup>3</sup> (35 ft<sup>3</sup>) or more off facility components must meet certain emission control requirements (40 CFR 61.145(a)(1) through 61.145(a)(3) and 61.145(c)(1) through 61.145(c)(3)).</p>	<p>Verify that all RACM are removed from facilities being demolished or renovated before any wrecking or dismantling unless:</p> <ul style="list-style-type: none"> <li>- it is a Category I nonfriable ACM that is not in poor condition and is not friable</li> <li>- the RACM is on a facility component that is encased in concrete or other similar material and is adequately wetted whenever exposed during demolition</li> <li>- it was not accessible for testing and is not discovered until after demolition began and, as a result of demolition, the materials cannot be safely removed</li> <li>- it is Category II nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder, during demolition.</li> </ul> <p>Verify that when a facility component that contains or is covered or coated with RACM is being taken out of the facility in units or sections:</p> <ul style="list-style-type: none"> <li>- they are adequately wetted when RACM are exposed during cutting and disjoining operations, and</li> <li>- the units or sections are carefully lowered to ground level.</li> </ul> <p>Verify that RACM is adequately wetted when it is being stripped from facility components while it remains in place in the facility except in renovation operation where wetting would unavoidably damage equipment and the facility:</p> <ul style="list-style-type: none"> <li>- requests a determination from the Administrator as to whether unavoidable damage would occur and supply Administrator with the information needed to make the decision, and</li> <li>- uses one of the following emission control methods: <ul style="list-style-type: none"> <li>- a local exhaust ventilation and collection system</li> <li>- a glove bag system</li> <li>- leaktight wrapping to contain all RACM.</li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-56.</b> Emissions from facility components that have been taken out in units or in sections from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components must be controlled (40 CFR 61.145(c)(4) and 61.145(c)(5)).</p>	<p>Verify that facility components are either stripped or contained in leaktight wrappings.</p> <p>Verify that facility components removed from facility as units or in sections for stripping meet the following:</p> <ul style="list-style-type: none"> <li>- RACM is adequately wet during stripping operations</li> <li>- a local exhaust ventilation and collection system designed and operated to capture emissions is in use</li> <li>- the exhaust system exhibits no visible emissions to outside air.</li> </ul> <p>Verify that when wetting operations are stopped because of the temperature, a record of the temperature is made and kept on file for 2 yr.</p> <p>(NOTE: For large facility components such as reactor vessels, large tanks, and steam generators, but not beams, stripping is not required if the following are met:</p> <ul style="list-style-type: none"> <li>- the component is removed, transported, stored, disposed of, or reused without disturbing the RACM</li> <li>- the component is encased in leaktight wrapping and labelled.)</li> </ul>
<p><b>8-57.</b> Emissions from RACM that has been removed or stripped from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM on other facility components or 1 m<sup>2</sup> or greater off facility components must be controlled (40 CFR 61.145(c)(6)).</p>	<p>Verify that asbestos materials that have been removed or stripped meet the following:</p> <ul style="list-style-type: none"> <li>- materials are adequately wet, and remain wet until collected for disposal</li> <li>- materials are carefully lowered to the ground or lower floor (not dropped or thrown)</li> <li>- materials not removed as units or in sections are transported to the ground via dust-tight chutes or containers if they are removed more than 50 ft [1524 cm] above ground level.</li> </ul>

<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-58.</b> When the temperature at the point of wetting is below 0 °C [32 °F] and facilities are being demolished under state or local orders or facilities with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m<sup>2</sup> (160 ft<sup>2</sup>) of RACM other facility components or at least 1 m<sup>3</sup> (35 ft<sup>3</sup>) off facility components are being demolished or renovated, specific exemptions and requirements apply (40 CFR 61.145(c)(7)).</p>	<p>Verify that facility components coated or covered with RACM materials are removed as units or in sections to the maximum extent possible.</p> <p>(NOTE: Wetting is not required at this temperature.)</p> <p>Verify that when wetting operations are stopped because of freezing temperatures, the temperature is recorded in the areas containing the facility components at the beginning, middle, and end of each work day.</p> <p>Verify that the temperature records are kept for 2 yr.</p>
<p><b>8-59.</b> Facilities being demolished under state or local governmental agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation (40 CFR 61.145(c)(9)).</p>	<p>Verify that in facilities being demolished under state or local governmental agency orders the portion of the facility that contains friable asbestos materials is adequately wetted during the wrecking operation.</p>
<p><b>8-60.</b> When a facility is demolished by intentional burning, all RACM, including Category I and II nonfriable ACM must be removed (40 CFR 61.145(c)(10)).</p>	<p>Verify that complex removal is done before burning.</p>

<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-61.</b> No RACM shall be stripped, removed, or otherwise handled or disturbed unless at least one onsite representative trained in asbestos removal is present (40 CFR 61.145(c)(8)).</p>	<p>Verify that trained person is present.</p> <p>Verify that the individual receives refresher training every 2 yr.</p>
<p><b>8-62.</b> When air cleaning is used as a method for controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards unless alternative equipment is authorized for use by the USEPA (40 CFR 61.152).</p>	<p>Verify that fabric filter collection systems meet the following requirements:</p> <ul style="list-style-type: none"> <li>- airflow permeability does not exceed 9 m<sup>3</sup>/min/m<sup>2</sup> (30 ft<sup>3</sup>/min/ft<sup>2</sup>) for woven fabrics or 11 m<sup>3</sup>/min/m<sup>2</sup> (35 ft<sup>3</sup>/min/ft<sup>2</sup>) for felted fabrics</li> <li>- the felted fabric weighs at least 475 g/m<sup>2</sup> (14 oz/yd<sup>2</sup>) and is at least 1.6 mm (1/16 in.) thick throughout</li> <li>- the use of synthetic fabrics containing fill yarn other than that which is spun is avoided.</li> </ul>



**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ASBESTOS DISPOSAL</b></p> <p><b>8-63.</b> Asbestos-containing waste materials are required to be disposed of properly (40 CFR 61.150(a) through 61.150(b)).</p> <p><b>8-64.</b> Asbestos-containing waste must be transported according to specific parameters (40 CFR 61.150(c) through 61.150(e)).</p>	<p>(NOTE: These requirements do not apply to Categories I or II nonfriable ACM that did not become crumbled, pulverized, or reduced to powder.)</p> <p>Verify that no visible emissions are discharged to the outside air during the collection, processing, packaging, transporting, or depositing of asbestos-containing waste material, or that the facility uses one of the following methods:</p> <ul style="list-style-type: none"> <li>- the asbestos-containing waste is adequately wetted</li> <li>- the asbestos-containing waste is processed into nonfriable forms</li> <li>- an alternative method approved by the USEPA.</li> </ul> <p>Verify that if the waste is wetted:</p> <ul style="list-style-type: none"> <li>- asbestos waste from control devices is mixed with water to form a slurry and the other materials are adequately wetted</li> <li>- no visible emissions are discharged or air cleaning is used to control the emissions</li> <li>- the wetted materials are sealed in leaktight containers while wet and labeled with the phrase <i>CAUTION, Contains Asbestos - Avoid Opening or Breaking Container, Breathing Asbestos is Hazardous to Your Health</i> or a label approved by OSHA</li> <li>- materials that don't fit in containers are put into leaktight wrapping.</li> </ul> <p>Verify that the waste generator deposits all ACM as soon as practical at one of the following:</p> <ul style="list-style-type: none"> <li>- a properly operated waste disposal site</li> <li>- a USEPA approved site that converts RACM and asbestos-containing waste material into asbestos-free material.</li> </ul> <p>Verify that vehicles used to transport asbestos-containing waste material are marked indicating an asbestos dust hazard.</p> <p>Verify that for all ACM transported off the facility, waste shipment records are maintained for at least 2 yr and a copy is provided to the waste disposal site.</p> <p>Verify that a procedure is in place to notify the local, state, or USEPA regional office if a copy of the waste shipment record is not returned to the waste generator within 45 days after the waste was accepted by the initial transporter.</p>

**COMPLIANCE CATEGORY:  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-65. Active waste disposal sites where ACM is being disposed of are required to meet specific standards (40 CFR 61.154(a) through 61.154(e) and 61.154(i) through 61.154(j)).</b></p>	<p>Determine if the facility is operating a landfill where asbestos is being disposed.</p> <p>Verify that there are no visible emissions from active asbestos-containing waste disposal sites, or that:</p> <ul style="list-style-type: none"> <li>- at the end of each operating day, or once in a 24 h period, the waste material is covered with either at least 15 cm (6 in.) of compacted non-ACM</li> <li>- a resinous or petroleum based dust suppression agent is applied, waste crankcase oil is not suitable for this purpose</li> <li>- an alternative method of control approved by the USEPA is used.</li> </ul> <p>Verify that unless a natural barrier exists deterring access by the general public that either the waste is properly covered by non-ACM daily or proper warning signs and fences are installed and maintained as follows:</p> <ul style="list-style-type: none"> <li>- warning signs are displayed at all entrances at intervals of 100 m (330 ft) or less along property line of the site or the perimeter of the section of the site where ACM is disposed and state that the site contains asbestos and warns against creating dust</li> <li>- the area is adequately fenced.</li> </ul> <p>Verify that a copy of waste shipment records are maintained for 2 yr.</p> <p>Verify that until closure, a record is kept of the location, depth, and area of asbestos-containing waste on a map or diagram of the disposal area.</p> <p>Verify that upon closure, the administration receives a copy of all records.</p> <p>Verify that a procedure is in place to notify the administration in at least 45 days prior to excavating or disturbing deposited asbestos-containing waste material.</p>
<p><b>8-66. Inactive waste disposal sites are required to meet specific standards (40 CFR 61.154(f) through 61.154(h) and 61.151).</b></p>	<p>Verify that inactive waste disposal sites meet one of the following:</p> <ul style="list-style-type: none"> <li>- no visible emissions are discharged</li> <li>- asbestos-containing waste material is covered with at least 15 cm (6 in.) of compacted non-ACM, and a vegetation cover is grown and maintained.</li> </ul> <p>(NOTE: In desert areas where vegetation is difficult to maintain at least 8 cm (3 in.) additional of well-graded nonasbestos-containing crushed rock may be used instead.)</p> <ul style="list-style-type: none"> <li>- cover the asbestos-containing waste material with at least 60 cm (2 ft) of non-ACM and maintain the cover to prevent exposure.</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
8-66. (continued)	<p>Verify that unless a natural barrier exists, warning signs and a fence are installed to deter public access.</p> <p>Verify that warning signs are displayed at all entrances and at intervals of 100 m (328 ft) or less and are easily read indicating the area is an asbestos waste disposal site.</p> <p>Verify that a procedure is in place to notify the administrator in writing at least 45 days prior to excavating or disturbing any asbestos-contaminated waste material at an inactive waste disposal site.</p>



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ASBESTOS IN SCHOOLS</b></p> <p><b>8-67.</b> Each building that is leased, owned, or otherwise used as a school building is required to be inspected for asbestos and a report of the inspection generated (40 CFR 763.85).</p> <p><b>8-68.</b> Each inspection or reinspection is required to result in a written assessment of all friable known or assumed ACBM in the school building (40 CFR 763.88(a) through 763.88(c)).</p>	<p>Determine which buildings at the facility are used as school buildings.</p> <p>Verify that the buildings have been inspected for asbestos, including sampling, by an accredited inspector.</p> <p>Verify that reinspection of all friable and nonfriable materials which are to be unknown or assumed ACBM occurs every 3 yr after a management plan is in place.</p> <p>Verify that each inspection and reinspection is documented in a report that is included in the management plan.</p> <p>(NOTE: Any building that is leased or acquired on or after 12 October 1988 that is to be used as a school building must be inspected prior to use as a school building. If emergency use of a building is required, inspection will occur within 30 days.)</p> <p>Verify that the assessment classifies the ACBM and suspected ACBM assumed to be ACM into one of the following categories:</p> <ul style="list-style-type: none"> <li>- damaged or significantly damaged thermal system insulation ACM</li> <li>- damaged friable surfacing ACM</li> <li>- significantly damaged friable surfacing ACM</li> <li>- damaged or significantly damaged friable miscellaneous ACM</li> <li>- ACBM with potential for damage</li> <li>- ACBM with potential for significant damage</li> <li>- any remaining friable ACBM or friable suspected ACBM.</li> </ul> <p>Verify that the designated person reviews the results of the inspections, reinspections, and assessments, and recommend a course of action to the local education agency.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-69.</b> An asbestos management plan is required for each school building and must be submitted to the Agency designated by the Governor of the state (40 CFR 763.93).</p>	<p>Determine if there is a plan.</p> <p>Verify that plans have been submitted.</p> <p>Verify that the plan is kept current and up-to-date with on-going operational and maintenance activities.</p> <p>Verify that the plan was developed by an accredited management planner and includes:</p> <ul style="list-style-type: none"> <li>- a list of the names and addresses of each school building and whether the building contains friable ACBM, nonfriable ACBM, and friable and nonfriable suspected ACBM assumed to be ACM</li> <li>- dates of inspections</li> <li>- a blueprint, diagram or written description of the school building identifying where samples were taken</li> <li>- description of sampling methodologies</li> <li>- analysis results</li> <li>- descriptions of any assessments made</li> <li>- name address and telephone number of the designated asbestos manager</li> <li>- detailed description of preventative measures and response actions taken</li> <li>- statements of accreditation</li> <li>- description in the form of a blueprint, diagram, or writing of any ACBM or suspected ACBM assumed to be ACM which remains in the school after response actions are taken</li> <li>- a plan for reinspection</li> <li>- a description of the steps taken to inform workers, building occupants, and/or their legal occupants about asbestos related activities</li> <li>- an evaluation of the resources needed to complete response actions and carryout reinspection, operations and maintenance activities, periodic surveillance, and training activities.</li> </ul> <p>Verify that a copy of the plan is on file in the school administrative office and available to workers before work begins in any area of the building.</p> <p>Verify that a copy of the plan is available for inspection by representatives of the USEPA, the state, and the public within 5 working days after receiving a request for inspection.</p>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-70.</b> Response actions are required to be selected and implemented in a timely manner and according to specific guidelines (40 CFR 763.90(a) through 763.90(f)).</p>	<p>Verify that if damaged or significantly damaged thermal system insulation ACM is present in the building, the facility will:</p> <ul style="list-style-type: none"> <li>- at least repair the damaged area</li> <li>- remove the damaged material if it is not feasible, due to technological difficulties, to repair the damage</li> <li>- maintain all thermal system insulation ACM and its coverings in an intact state and undamaged condition.</li> </ul> <p>Verify that if damaged friable surfacing ACM or damaged friable miscellaneous ACM is present, the facility uses one of the following response actions:</p> <ul style="list-style-type: none"> <li>- encapsulation</li> <li>- enclosure</li> <li>- removal</li> <li>- repair.</li> </ul> <p>Verify that if significantly damaged friable surfacing ACM or significantly damaged friable miscellaneous ACM is present in a building the facility:</p> <ul style="list-style-type: none"> <li>- immediately isolates the functional space and restricts access unless isolation is not needed to protect human health</li> <li>- remove the material in the functional space or, depending on whether enclosure or encapsulation is sufficient to protect human health and the environment, enclose or encapsulate.</li> </ul> <p>Verify that if any friable surfacing ACM, thermal system insulation ACM, or friable miscellaneous ACM that has potential for damage is present in the building, an appropriate operations and maintenance (O&amp;M) program is implemented.</p> <p>Verify that if any friable surfacing ACM, thermal insulation ACM, or friable miscellaneous ACM that has potential for significant damage is present, the facility:</p> <ul style="list-style-type: none"> <li>- implements an appropriate O&amp;M program</li> <li>- institutes preventative measures to eliminate the reasonable likelihood that the ACM will become significantly damaged, deteriorated, or delaminated</li> <li>- remove the material as soon as possible if appropriate preventative measures cannot be implemented.</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-71.</b> An accredited person must be designated by the local education agency to perform specific tasks and functions (40 CFR 763.84(g) and 763.88 (d)).</p> <p><b>8-72.</b> An operations, maintenance, and repair (O&amp;M) program is required to be developed whenever any friable ACM is present or assumed to be present in a building that is used as a school building (40 CFR 763.91(a) through 763.91(e)).</p>	<p>Verify that the person designated to ensure that requirements concerning asbestos in schools are implemented correctly is trained in the following:</p> <ul style="list-style-type: none"> <li>- health effects of asbestos</li> <li>- detection, identification, and assessment of ACM</li> <li>- options for controlling ACM</li> <li>- asbestos management programs</li> <li>- relevant state and Federal regulations.</li> </ul> <p>(NOTE: Any material identified as nonfriable ACM or nonfriable assumed ACM must be treated as friable ACM when the material is about to become friable as a result of activities performed in the school building.)</p> <p>Verify that the following actions are taken during small scale, short duration O&amp;M operations:</p> <ul style="list-style-type: none"> <li>- entry is restricted into the area by persons other than those needed to perform the maintenance project (this can be done by isolating the area or by scheduling)</li> <li>- signs are posted to prevent entry by unauthorized persons</li> <li>- air-handling systems are shutoff or temporarily modified and other sources of air movement are restricted</li> <li>- whatever work practices are required to prohibit the spread of any released fibers are used</li> <li>- all fixtures or other components are cleaned in the immediate work area</li> <li>- the asbestos debris and other cleaning materials are placed in a sealed, leak-tight container.</li> </ul> <p>Verify that response actions disturbing friable ACM, other than small-scale, short-duration maintenance, are designed by persons accredited to design response actions and conducted by persons accredited to conduct response actions.</p>



**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>8-73.</b> Warning labels are required to be attached immediately adjacent to any friable and nonfriable ACBM and suspected ACBM assumed to be ACM located in routine maintenance areas (such as boiler rooms) at each school building (40 CFR 763.95).</p> <p><b>8-74.</b> All members of the school maintenance and custodial staff who might work in a building that contains ACBM are required to receive at least 2 h of awareness training whether or not they are required to work with ACBM (40 CFR 763.92(a)(1)).</p>	<p>Verify that labels are in place in the following areas:</p> <ul style="list-style-type: none"> <li>- where friable ACBM was responded to by any means other than removal</li> <li>- where there is ACBM for which no response action was carried out.</li> </ul> <p>Verify that labels are displayed in highly visible places and remain posted until the ACBM that is labeled is removed.</p> <p>Verify that the label reads CAUTION: ASBESTOS. HAZARDOUS. DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT.</p> <p>Verify that the school maintenance and custodial staff has been trained.</p> <p>Verify that new personnel are trained within 60 days after start of employment.</p> <p>Verify that the training has included:</p> <ul style="list-style-type: none"> <li>- information regarding asbestos and the various uses and forms</li> <li>- information on the health effects associated with asbestos exposure</li> <li>- locations of all ACBM identified throughout each school building in which they work</li> <li>- recognition of damaged, deterioration, and location of the management plan</li> <li>- name and telephone number of the person designated to carry out responsibilities for asbestos management.</li> </ul>
<p><b>8-75.</b> School maintenance and custodial staff that conduct any activities that will result in the disturbance are required to received an additional 14 h of training (40 CFR 763.92 (a)(2)).</p>	<p>Verify that staff has received additional training that includes:</p> <ul style="list-style-type: none"> <li>- descriptions of the proper methods of handling ACBM</li> <li>- information on the use of respiratory protection and other personal protective measures</li> <li>- the requirements found in 40 CFR 763</li> <li>- hands-on training in the use of respiratory protection, other personal protection measures and good work practices.</li> </ul>

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

8-76. Records pertaining to asbestos in schools are required to be maintained in a central location in the administrative office of the school (40 CFR 763.94).

**REVIEWER CHECKS:**

Verify that records concerning removal of ACBM are retained for 3 yr after the next reinspection.

Verify that records for the following are retained:

- preventive measures and response actions
- personnel training
- O&M activities
- fiber release episodes.

**COMPLIANCE CATEGORY:  
SPECIAL POLLUTANTS MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**RADON GAS**

**8-77.** FWS facilities are required to test for radon according to specific procedures (Department of the Interior (DOI) 485 DM, para 27.4a and 27.4b).

Verify that the monitor was in place for 90 days.

Verify that screening tests were conducted on the lowest occupiable level (basement) and on the first above ground floor.

Verify that the testing was done during the time of year when the building is normally kept closed.

Verify that the following have been tested:

- schools, medical facilities, living quarters, and daycare facilities
- structures that are occupied for more than 520 h/yr, including dwellings, offices, and workspaces.

Verify that if the screening result was 4 to 20 pCi/L, a 12-mo alpha track device was placed in the lowest lived-in area to obtain a more accurate assessment of the annual average radon level.

Verify that if the screening result is greater than 20 pCi/L, short-term measurements using charcoal canisters or continuous radon monitors is undertaken to verify the screening results and better estimate the annual average radon level.

**8-78.** Depending on the results of the radon tests, specific mitigation measures must be taken (DOI 485 DM, para 27.4c).

Verify that occupied structures with an annual average radon levels greater than 4.0 pCi/L are required to be mitigated according to the following schedule:

Annual Average Radon Level (pCi)	Residential Living Spaces	Office Working Spaces
> 200	1 mo	3 mo
20 - 200	1 yr	2 yr
10 - 19.9	2 yr	4 yr
4 - 9.0	4 yr	6 yr
< 4	No mitigation	No mitigation

(NOTE: If additional time is required for mitigation in areas where the result was greater than 200 pCi, the premises must be vacated until the mitigation achieves a reduction to lower radon levels.)

COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT Fish and Wildlife Service											
REGULATORY REQUIREMENTS:	REVIEWER CHECKS:										
<p>8-79. Structures which have undergone mitigation are required to undergo additional monitoring (DOI 485 DM, para 4.27d).</p>	<p>Verify that if a structure has undergone mitigation, it is re-tested according to the following schedule:</p> <table border="0"> <thead> <tr> <th>Premitigation Level (pCi)</th> <th>Re-testing Frequency</th> </tr> </thead> <tbody> <tr> <td>&gt; 200</td> <td>Annual</td> </tr> <tr> <td>20 - 200</td> <td>Every 2 yr</td> </tr> <tr> <td>10 - 19.9</td> <td>Every 4 yr</td> </tr> <tr> <td>4 - 9.9</td> <td>Every 10 yr.</td> </tr> </tbody> </table>	Premitigation Level (pCi)	Re-testing Frequency	> 200	Annual	20 - 200	Every 2 yr	10 - 19.9	Every 4 yr	4 - 9.9	Every 10 yr.
Premitigation Level (pCi)	Re-testing Frequency										
> 200	Annual										
20 - 200	Every 2 yr										
10 - 19.9	Every 4 yr										
4 - 9.9	Every 10 yr.										
<p>8-80. DOI owned underground sources of water will be tested for radon (DOI 485 DM, para 4.27e).</p>	<p>Determine if the facility owns a source of underground water.</p> <p>Verify that the water is tested for radon.</p> <p>Verify that if the concentration is greater than 300 pCi/L mitigation is implemented.</p>										

<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>ENVIRONMENTAL NOISE</b>  <b>8-81.</b> A single facility point of contact should be identified for noise complaints (GMP)	Verify that a point of contact has been identified if the facility has activities that produce noise that would potential disturb people outside the property lines.  Verify that the POC keeps a log of complaints.



**Appendix 8-1**

**PCB Label Format**

<p><b>CAUTION</b></p> <p><b>CONTAINS</b></p> <p><b>PCBs</b></p> <p><b>(Polychlorinated Biphenyls)</b></p> <p>A toxic environmental contaminant requiring special handling and disposal in accordance with U.S. Environmental Protection Agency Regulations 40 CFR 761 -- For Disposal Information contact the nearest U.S. E.P.A. Office</p> <hr/> <p>In case of accident or spill, call toll free the U.S. Coast Guard National Response Center: 800:424-8802</p> <p>Also Contact _____ Tel. No. _____</p>
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## Appendix 8-2

### Dielectric Fluid Trend Names and Manufacturers

#### 1. U.S. Manufactured Dielectrics:

Name	Manufacturer
Aroclor	Monsanto
Aroclor B	Mallory
Sbestol	American Corporation
Askarel Hevi-Duty	Hevi-Duty Corporation
Askarel *	Ferranti-Packard, Ltd.
Askarel	Universal Mfg. Co.
Chlorextol	Allis-Chalmers
Chlorinol	Sparagoe Electric
Chlorphen	Jard Company
Diachlor	Sangamo Electric
Dykanol	Cornell Dubilier
Elemex	McGraw Edison
Eucarel	Electric Utilities Co.
Hyvol	Aerovox
Inerteen	Westinghouse Electric
No-Flamol	Wagner Electric
Pyranol	General Electric
Saf-T-Kuhl	Kuhlman Electric

\* Generic name used for insulating liquids in capacitors and transformers.

#### 2. Foreign Manufactured Dielectrics:

Name	Manufacturer
Clophen	Bayer (Germany)
Fenclo	Caffaro (Italy)
Kennechlor	Mitsubishi (Japan)
Phenoclor	Prodelec (France)
DK	Caffaro (Italy)
Pyralene	Prodelec (France)
Solvol	USSR
Santotherm	Mitsubishi (Japan)

3. Transformers that list other dielectrics or do not bear a manufacturer's identification or service plate on the transformer: if the transformer contains any of the dielectrics (commonly referred to as askarels), it is to be certified as a PCB transformer containing in excess of 500 ppm PCB and no laboratory testing is necessary.



<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>SPECIAL POLLUTANTS MANAGEMENT</b> <b>Fish and Wildlife Service</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> <b>NA      C      RMA</b>	<b>REVIEWER CHECKS:</b>		

## **SECTION 9**

### **UNDERGROUND STORAGE TANK (UST) MANAGEMENT**

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**The contents of this section are the minimum requirements the assessor must review. The assessor must also review applicable state and local regulations.**

## SECTION 9

### UNDERGROUND STORAGE TANK (UST) MANAGEMENT

#### A. Applicability

This section applies to FWS facilities that utilize USTs for storage of hazardous materials or petroleum products. This section presents review action items for the proper management of USTs. The evaluation of UST management ranges from the installation of new systems and the maintenance of existing systems, to the repair, replacement, or permanent removal of USTs.

#### B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA), Subtitle I.* This law, Public Law (PL) 99-49 (42 U.S. Code (USC) 6991-6991i), established the standards and procedures for USTs. It required the U.S. Environmental Protection Agency (USEPA) to issue standards on leak detection, record maintenance, release reporting, corrective actions, tank upgrading, and replacement (42 USC 6991b(a)(c)).
- *The Federal Facilities Compliance Act (FFCA) of 1992.* This Act provides for a waiver of sovereign immunity with respect to Federal, state, and local procedural and substantive requirements relating to RCRA.
- *Executive Order (EO) 12088, Federal Compliance with Pollution Standards.* This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

#### C. State/Local Requirements

Many state and local governments have active UST programs. These various governments have developed regulations specific to the physical environment and the regulated communities' needs. It is important to review regulations at the state and local level to ensure that any differences such as reporting or notice requirements, and monitoring requirements are complied with.

#### D. Key Compliance Requirements

- **Substandard USTs** - Substandard UST systems must be upgraded, closed, or removed from service by 22 December 1998. If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr (40 CFR 280.21(a) through 280.21(c)).

- **New or Upgraded USTs** - New or upgraded USTs are required to be fitted with spill and overfill prevention equipment. Notice must be given to the appropriate authority within 30 days when a UST system is brought into service after 8 May 1986. If the UST is installed after 22 December 1988, it must be constructed so that it will remain structurally sound for its operating life. Installation of USTs must be done by a certified installer and UST systems must be made of or lined with, materials compatible with the substance stored (40 CFR 280.20, 280.21(d), 280.22, and 280.32).
- **Metallic USTs** - Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection, or other effective methods. They must also undergo regular pressure testing (40 CFR 112.7(e)(2)(iv)).
- **Spill and Overfill Prevention** - The filling of a UST must include the prevention of overfilling and spilling of the substance. If a spill does occur, facilities with UST systems are required to contain and immediately cleanup a spill or overfill and report it to the implementing agency within 24 h if (40 CFR 280.30, 280.53):
  1. spills or overfills of petroleum resulted in a release to the environment of more than 25 gal [93.89 L] or caused a sheen on nearby surface water
  2. spills or overfills of hazardous substances result in a release to the environment in excess of the reportable quantity.
- **Corrosion Protection and Repairs** - Corrosion protection on USTs must operate continuously to provide corrosion protection to the metal components that routinely contain regulated substances and are in contact with the ground. UST systems with impressed current cathodic protection are required to be inspected every 60 days by a qualified cathodic protection tester. Repairs to USTs must be performed according to industry code. Tanks and piping that have been replaced or repaired are required to be tested for tightness within 30 days. Records of repairs shall be maintained for the life of the tank (40 CFR 280.31, 280.33, 280.43, and 280.44).
- **Release Detection** - Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection. Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators. Release detection records are required to be kept as follows (40 CFR 280.40 through 280.45):
  1. all written performance claims pertaining to any release detection system used for 5 yr from the date of installation
  2. the results of any sampling testing or monitoring for 1 yr
  3. the results of tank tightness testing, until the next test is done
  4. written documentation of calibration, maintenance, repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done
  5. schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation.

Depending on the age, size, and construction of the tank, acceptable methods of release detection include the following:

1. inventory control
2. manual tank gauging
3. tank tightness testing
4. automatic tank gauging

5. vapor monitoring
6. groundwater monitoring
7. interstitial monitoring.

Existing UST system tanks must implement release detection requirements based on when the system was installed. The table below identifies the deadline for providing release detection:

<b>UST System Installation Date</b>	<b>Leak Detection Required by 22 December of:</b>
All others	1992
1980-December 1988	1993

- Release Detection for Underground Piping Associated with UST Systems - 40 CFR 280, Subpart D, establishes separate release detection requirements for underground piping depending on whether it conveys substances under pressure or suction. These include:
  1. Pressurized piping must be equipped with an automatic line leak detector and have an annual line tightness test conducted; or pressurized piping must be equipped with an automatic line leak detector and a permanent release detection system that allows monthly monitoring. Permanent release detection methods acceptable for piping include: vapor monitoring, interstitial monitoring, and groundwater monitoring. The deadline for implementing release detection requirements on pressurized piping is 22 December 1990.
  2. Suction piping either must have a line tightness test conducted every 3 yr or must use a permanent release detection system that allows monthly monitoring. Deadlines for implementing release detection requirements on suction piping are based on when the UST system was installed. The table above identifies the deadline for providing release detection. For suction piping constructed to certain standards, no release detection monitoring is required. It must meet five criteria:
    - a. belowgrade piping must operate at less than atmospheric pressure
    - b. belowgrade piping must be sloped to drain back into the tank when suction is released
    - c. only one check valve can be included in each suction line
    - d. check valve shall be located directly below and as close as practical to the suction pump
    - e. criteria in paragraphs b through d must be verifiable.
- Hazardous Substance USTs - Existing hazardous substance USTs are required to meet release detection standards for petroleum USTs (40 CFR 280.42).
- Reporting and Recordkeeping Requirements - Facilities are required to submit notifications of new USTs, release reports, planned or complete corrective actions, and notice of clo

sure or change-in-service when applicable. Records are required to be available at the UST site or at a readily available alternative site. Records are to be kept of the following (40 CFR 280.34 280.45, and 280.74):

1. corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used
  2. documentation of operation of corrosion protection equipment
  3. documentation of repairs
  4. closure records
  5. results of any site investigations.
- **Change-in-Service or Closure of USTs** - USTs which are put out of service temporarily must have continued maintenance. If the UST has been out-of-service for near or over 1 yr, plans must be made for permanent closure. The facility must notify the implementing agency (USEPA) for any closure or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency. UST closure must be done by either removing the tank from the ground or leaving it in place with the contents removed and filled with an inert solid material and closing it to all future outside access. If a tank is undergoing a change-in-service, it must be emptied and cleaned and a site assessment conducted. Prior to the completion of permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site. Facilities with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.70 through 280.73).
  - **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **E. Key Compliance Definitions**

- **Aboveground Release** - any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the aboveground portion of an UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from an UST system (40 CFR 280.12).
- **Ancillary Equipment** - any devices including, but not limited to, such devices as pipings, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from the UST (40 CFR 280.12).
- **Belowground Release** - any release to the subsurface of the land and to groundwater. This includes, but is not limited to, releases from the belowground portion of an UST system and belowground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST (40 CFR 280.12).
- **Cathodic Protection** - a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current (40 CFR 280.12).



- ***Cathodic Protection Tester*** - a person who can demonstrate understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems (40 CFR 280.12).
- ***CERCLA - Comprehensive Environmental Response Compensation and Liability Act of 1980*** as amended (40 CFR 280.12).
- ***Compatible*** - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the UST (40 CFR 280.12).
- ***Connected Piping*** - all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them (40 CFR 280.12).
- ***Consumptive Use*** - with respect to heating oil means consumed on the premises (40 CFR 280.12).
- ***Corrosion Expert*** - a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks (40 CFR 280.12).
- ***Deferred USTs*** - USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing petroleum or hazardous substances in 40 CFR 280.60 through 280.67. These tanks include (40 CFR 280.10(e):
  1. wastewater treatment tank systems
  2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act of 1954*
  3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
  4. airport hydrant fuel distribution systems
  5. UST system with field-constructed tanks.
- ***Dielectric Material*** - a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping) (40 CFR 280.12).

- **Electrical Equipment** - underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electric cable (40 CFR 280.12).
- **Excavation Zone** - the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation (40 CFR 280.12).
- **Excluded USTs** - these are USTs which are not required to meet the requirements found in 40 CFR 280 and include (40 CFR 280.10(b)):
  1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act* (SWDA), or a mixture of such hazardous waste and other regulated substances
  2. any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the *Clean Water Act* (CWA)
  3. equipment of machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment
  4. any UST system whose capacity is 110 gal [416.40 L] or less
  5. any UST system that contains a de minimis concentration of a regulated substance
  6. any emergency spill or overflow containment UST system that is expeditiously emptied after use.
- **Existing Tank System** - a tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before 22 December 1988. Installation is considered to have commenced if (40 CFR 280.12):
  1. the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system
  2. a. either a continuous onsite physical construction or installation program has begun
    - b. or the owner or operator has entered into any contractual obligations:
      1. which cannot be canceled or modified without substantial loss
      2. for physical construction at the site or installation of the tank system to be completed within a reasonable time.
- **Farm Tank** - a tank located on a tract of land devoted to the production of crops or raising animals, including fish, and associated residences and improvements. A farm tank must be located on the farm property. Farm includes fish hatcheries, rangeland, and nurseries with growing operations (40 CFR 280.12).
- **Flow-Through Process Tank** - a tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of material prior to their introduction into the production process or for the storage of finished products or by-products from the production (40 CFR 280.12).
- **Free-Product** - a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) (40 CFR 280.12).
- **Gathering Lines** - any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production (40 CFR 280.12).

- **Good Management Practice (GMP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Hazardous Substance UST System** - any UST system that contains a hazardous substance defined in section 101(14) of the *Comprehensive Environmental Compensation and Liability Act (CERCLA) of 1980* (but not including any substance regulated as a hazardous waste under subtitle C) or any mixture of such substances and petroleum, and which is not a petroleum UST system (40 CFR 280.12).
- **Heating Oil** - petroleum that is No. 1, No. 2, No. 4--light, No. 4--heavy, No. 5 --heavy, and No. 6 technical grades of fuel oil; other residual fuel oils (including Navy Special Fuel Oil and Bunker C); and other fuels when used as substitutes for one of these fuel oils. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces (40 CFR 280.12).
- **Hydraulic Lift Tank** - a tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices (40 CFR 280.12).
- **Liquid Trap** - sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extracting operations (including gas production plants), for the purpose of collecting oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or reinjection into a production or pipeline stream, or may collect and separate liquids from a gas stream (40 CFR 280.12).
- **Maintenance** - the normal operational upkeep to prevent a UST system from releasing product (40 CFR 280.12).
- **Motor Fuel** - petroleum or a petroleum-based substance that is motor gasoline, aviation gasoline, No. 1 or No. 2 diesel fuel, or any grade of gasohol, and is typically used in the operation of motor engines (40 CFR 280.12).
- **New Tank System** - a tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after 22 December 1988 (40 CFR 280.12).
- **Noncommercial Purposes with Respect to Motor Fuel** - not for resale (40 CFR 280.12).
- **On the Premises Where Stored (heating oil)** - UST systems located on the same property where the stored heating oil is used (40 CFR 280.12).
- **Operator** - any person in control of or having responsibility for the daily operation of the UST system (40 CFR 280.12).
- **Overfill Release** - a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (40 CFR 280.12).

- **Person** - an individual, trust, firm, joint stock company, Federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. *Person* also includes a consortium, a joint venture, a commercial entity, and the U.S. Government (40 CFR 280.12).
- **Petroleum UST System** - an UST system that contains petroleum or a mixture of petroleum with *de minimis* quantities of other regulated substances. Such systems include those containing motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).
- **Pipe or Piping** - a hollow cylinder or tubular conduit that is constructed of nonearthen materials (40 CFR 280.12).
- **Pipeline Facilities** - (including gathering lines) are new and existing pipe rights-of-way and any associated equipment, facilities, or buildings (40 CFR 280.12).
- **Regulated Substance (40 CFR 28.12)** -
  1. any substance defined in section 101(14) of the CERCLA of 1980 (but not including any substance regulated as a hazardous waste under subtitle C)
  2. petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 °F [15.56 °C] and 14.7 lb/psia).

(NOTE: The term *regulated substance* includes, but is not limited to, petroleum and petroleum based substances comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils.)

- **Release** - any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from an UST into groundwater, surface water, or subsurface soils (40 CFR 280.12).
- **Release Detection** - determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (40 CFR 280.12).
- **Repair** - to restore a tank or UST system component that has caused a release of product from the UST system (40 CFR 280.12).
- **Residential Tank** - a tank located on property used primarily for dwelling purposes (40 CFR 280.12).
- **SARA - Superfund Amendments and Reauthorization Act** (40 CFR 280.12).

- **Septic Tank** - a water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such receptacle is distributed through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (40 CFR 280.12).
- **Stormwater or Wastewater Collection System** - piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water runoff resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of stormwater and wastewater does not include treatment except where incidental to conveyance (40 CFR 280.12).
- **Surface Impoundment** - a natural topographic depression, manmade excavation, or diked area formed of primarily of earthen materials (although may be lined with manmade materials) that is not an injection well (40 CFR 280.12).
- **Tank** - a stationary device designed to contain an accumulation of regulated substances and constructed of nonearthen materials (e.g., concrete, steel, plastic) that provide structural support (40 CFR 280.12).
- **Underground Area** - an underground room such as a basement, cellar, shaft, or vault, providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor (40 CFR 280.12).
- **Underground Release** - any below ground release (40 CFR 280.12).
- **Underground Storage Tank (UST)** - any one or a combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. This term does not include any (40 CFR 280.12):
  1. farm or residential tank of 1100 gal [4163.95 L] or less capacity used for storing motor fuel for noncommercial purposes
  2. tank used for storing heating oil for consumptive use on the premises where stored
  3. septic tanks
  4. pipeline facility (including gathering lines) which are regulated by other Acts
  5. surface impoundment, pit, pond, or lagoon
  6. stormwater or waste water collection system
  7. flow-through process tank
  8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
  9. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor such as basements or tunnels
  10. tanks holding 110 gal [106.21 L] or less
  11. emergency spill and overfill tanks.

(NOTE: The definition of UST does not include any pipes connected to any tank which is described in para (1) through (9) of this definition.)

- ***Upgrade*** - the addition or retrofit of some systems such as cathodic protection, lining, or spill and overfill controls to improve the ability of a UST system to prevent the release of product (40 CFR 280.12).
- ***UST System or Tank System*** - UST, connected underground piping, underground ancillary equipment, and containment system, if any (40 CFR 280.12).
- ***Wastewater Treatment Tank*** - a tank that is designed to receive and treat influent waste water through physical, chemical, or biological methods (40 CFR 280.12).

## **Underground Storage Tank (UST) MANAGEMENT**

### **GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
All Facilities	9-1 through 9-5	15
Substandard USTs	9-6	17
New or Upgraded USTs	9-7 through 9-11	19
Metallic USTs	9-12	21
Heating Oil USTs	9-13	23
UST Filling	9-14 and 9-15	25
UST Corrosion Protection and Repairs	9-16 and 9-17	27
Release Detection For USTs		
General	9-18	29
Petroleum USTs	9-19	31
Hazardous Substance USTs	9-20 and 9-21	33
USTs Connected to Emergency Generators	9-22	35
UST Releases	9-23 through 9-29	37
Deferred UST Systems	9-30	41
UST Documentation	9-31 and 9-32	43
Changes-in-Service or Closure of USTs	9-33 through 9-39	45





## **Underground Storage Tank (UST) MANAGEMENT**

### **Records to Review**

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Official correspondence with state implementing agency
- Spill Prevention and Response Plan
- Records of spill response training programs
- Results of all UST testing, sampling, monitoring, inspection, maintenance, and repair work (for 1 yr)
- Registration records for all in-service, temporarily out-of-service, and permanently closed tanks
- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Records for UST disposal, closure, and removal from activity and results of excavation area assessment (for 3 yr)

### **Physical Features to Inspect**

- Refueling facilities, including:
  - Belowground storage tanks and dikes
  - Venting
  - Fill pipe
  - Gauges
  - Vehicle Maintenance areas
- Oil and Hazardous Substance Site
- Any site with a UST



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>ALL FACILITIES</b></p> <p><b>9-1.</b> Actions or changes since previous review of UST management should be examined (GMP).</p> <p><b>9-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on UST operation, maintenance and closure should be available at the facility (GMP).</p> <p><b>9-3.</b> FWS facilities are required to comply with state and local regulations (EO 12088, Section 1-1).</p> <p><b>9-4.</b> Facilities will meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>(NOTE: Some FWS USTs fall under the definition of a farm tank and are exempted from the requirements of 40 CFR 280.)</p> <p>Verify that copies of the following regulations are available and kept current:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards</i>.</li> <li>- 40 CFR 280, <i>Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)</i>.</li> <li>- appropriate state and local regulations.</li> </ul> <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- operational standards</li> <li>- permitting requirements</li> <li>- replacement and removal schedules</li> <li>- cathodic protection requirements</li> <li>- alarm system requirements.)</li> </ul> <p>Determine if any new regulations concerning UST have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p>

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**REGULATORY  
REQUIREMENTS:**

9-5. FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).

**REVIEWER CHECKS:**

Determine if the facility has received an NOV relating to UST management.  
Verify that the NOV was reported to the Region and the SPCO.

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>SUBSTANDARD USTs</b></p> <p>9-6. Substandard UST systems are required to be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.21(a) through 280.21(c)).</p>	<p>(NOTE: See Appendix 9-1 for guidance on applicability of checklist items.)</p> <p>(NOTE: If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr.)</p> <p>Determine if there are currently any plans for upgrading or decommissioning of a substandard UST.</p> <p>Verify that upgrading of steel USTs includes one of the following methods:</p> <ul style="list-style-type: none"> <li>- internal lining according to the following requirements: <ul style="list-style-type: none"> <li>- lining is installed so that it prevents releases due to structural failure or corrosion and meets a recognized code of practice</li> <li>- within 10 yr after installation of lining, and every 5 yr thereafter, the lined tank is inspected internally and found to be structurally sound, with the lining still performing in accordance with original design specifications</li> </ul> </li> <li>- cathodic protection with field-installed systems designed by an expert, impressed current systems, or an approved equivalent system and the integrity is assured by one of the following: <ul style="list-style-type: none"> <li>- tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion</li> <li>- the tank has been installed for less than 10 yr and is monitored monthly for releases</li> <li>- the tank has been installed for less than 10 yr and is assessed for corrosion holes by conducting two tightness tests, one before and one 3 to 6 mo after installation of the cathodic protection system</li> <li>- tank is assessed for corrosion holes by a method that is determined to be equally protective by the implementing agency</li> </ul> </li> <li>- lining combined with cathodic protection: <ul style="list-style-type: none"> <li>- if lining is installed according to requirements</li> <li>- if cathodic protection system meets requirements.</li> </ul> </li> </ul> <p>Verify that when spill and overfill equipment is added, the tank meets the same standards as new USTs.</p> <p>Verify that piping that routinely contains regulated substances and is in contact with the ground is cathodically protected.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>NEW OR UPGRADED USTs</b></p> <p>9-7. New or upgraded USTs are required to be fitted with spill and overfill prevention equipment (40 CFR 280.20(c) and 280.21 (d)).</p> <p>9-8. Notice must be given within 30 days when a UST system is brought into service after 8 May 1986 (40 CFR 280.22).</p>	<p>Verify that spill prevention equipment will prevent a release of product to the environment when the transfer hose is detached from the fill pipe.</p> <p>Verify that overfill prevention equipment does one of the following:</p> <ul style="list-style-type: none"> <li>- automatically shuts off flow into the tank when the tank is no more than 95 percent full</li> <li>- alerts the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm</li> <li>- restrict flow 30 min prior to overfilling, alert the operator with a high-level alarm 1 min before overfilling, or automatically shut off flow into the tank so that none of the fittings are exposed to product due to overfilling.</li> </ul> <p>(NOTE: This equipment is not required if approved equivalent equipment is used or the UST system is filled by transfers of no more than 25 gal [94.64 L] at one time.)</p> <p>(NOTE: All existing tanks must be upgraded by 1998.)</p> <p>Determine if the facility has brought any USTs into service after 8 May 1986.</p> <p>Verify that appropriate notification was issued.</p> <p>(NOTE: State forms may be used for notification in lieu of an USEPA form 7530. These notices must be sent to the appropriate agency.)</p>

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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>9-9.</b> UST systems installed after 22 December 1988 must be constructed in such a manner that they will remain structurally sound for their operating life (40 CFR 280.20(a) and 280.20 (b)).</p>	<p>Verify that USTs conform to industry standards by reviewing records.</p> <p>Verify that USTs meet the following:</p> <ul style="list-style-type: none"> <li>- they have leak/spill prevention protection</li> <li>- the tank is constructed of one of the following materials: <ul style="list-style-type: none"> <li>- fiberglass-reinforced plastic</li> <li>- steel which has one of the following types of cathodic protection: <ul style="list-style-type: none"> <li>- coated with a suitable dielectric material</li> <li>- field installed cathodic protection (expert installed), and</li> <li>- impressed current systems which allow determination of current operating status</li> </ul> </li> <li>- steel fiberglass reinforced plastic composite</li> <li>- metal without additional corrosion protection provided that: <ul style="list-style-type: none"> <li>- the site has been determined not to cause corrosion to the tank by a corrosion expert</li> <li>- records are maintained for the life of the tank that it is in a corrosion free environment</li> </ul> </li> </ul> </li> <li>- construction is in a manner that is deemed to prevent release of the regulated substance.</li> </ul> <p>(NOTE: Piping must also meet these criteria with the exception of not being constructed of steel fiberglass reinforced plastic composite.)</p>
<p><b>9-10.</b> Installation of UST must be done by a certified installer and according to standard practices (40 CFR 280.20(d) and 280.20 (e)).</p>	<p>Determine if new UST systems have been properly installed by reviewing records for certification.</p> <p>Verify that if the facility does its own installation of USTs, the installation is done according to standard practices.</p> <p>Verify that the installer was certified by the manufacturer or implementing agencies.</p>
<p><b>9-11.</b> Facilities are required to use UST systems made of or lined with materials compatible with the substance stored (40 CFR 280.32).</p>	<p>Verify that the substances stored in UST systems are compatible with the system.</p> <p>Determine which USTs are being used to store a substance other than that for which it was originally intended.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>METALLIC USTs</b></p> <p><b>9-12.</b> Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection, or other effective methods (40 CFR 112.7(e)(2)(iv)).</p>	<p>Verify that new USTs are appropriately protected from corrosion by inspecting records and interviewing personnel.</p> <p>Verify that the tanks are pressure tested regularly.</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> <li>- the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> <li>- onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines</li> <li>- equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the Department of Transportation (DOT)</li> </ul> </li> <li>- both of the following criteria are met: <ul style="list-style-type: none"> <li>- the underground buried storage capacity of the facility is 42,000 gal [158,987.3 L] or less of oil</li> <li>- the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].)</li> </ul> </li> </ul>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>HEATING OIL USTs</b></p> <p><b>9-13.</b> USTs used to store heating oil for consumptive use on the premise should meet the requirements outlined in 40 CFR 280 (GMP).</p>	<p>Determine if the facility has tanks used for storing heating oil for consumptive use on the premise.</p> <p>Verify that these tanks meet release detection requirements, spill and overfill protection requirements, corrosion control requirements, and release reporting requirements applicable to tanks that meet the definition of UST.</p> <p>(NOTE: Under 40 CFR 280.12, USTs storing heating oil for consumptive use on the premises are exempted from the regulatory definition of UST.)</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>UST FILLING</b></p> <p><b>9-14.</b> The filling of a UST must include the prevention of overfilling and spilling of the substance (40 CFR 280.30(a)).</p> <p><b>9-15.</b> Facilities with UST systems are required to contain and immediately cleanup a spill or overfill and report it to the implementing agency within 24 h in specific situations (40 CFR 280.30 (b) and 280.53).</p>	<p>Determine if there is a problem with overfilling of USTs or spills by observing the filling operations, reviewing records, and checking the ground around the fill-lines for visible or odorous indications of contamination.</p> <p>Determine if the level of the UST is checked before a transfer is made and that the volume available in the tank is greater than the volume of the product to be transferred.</p> <p>Verify that fill-lines are capped and locked.</p> <p>Verify that the transfer is monitored constantly.</p> <p>Determine if the facility has reported, contained, and cleaned up any and all spills or overfills which met the following criteria:</p> <ul style="list-style-type: none"> <li>- spills or overfills of petroleum that resulted in a release to the environment of more than 25 gal [94.64 L] or that caused a sheen on nearby surface water</li> <li>- spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity (see the Hazardous Materials Management Appendices).</li> </ul> <p>(NOTE: Spills or overfills of hazardous substances equal to or greater than the reportable quantity must be immediately reported to the National Response Center (NRC).)</p> <p>Verify that the facility has contained and immediately cleaned-up a spill or overfill of petroleum that is less than 25 gal [94.64 L] and a spill or overfill of a hazardous substance that is less than the reportable quantity.</p> <p>Verify that, if these lesser quantities cannot be accomplished within 24 h, or another reasonable time period established by the implementing agency, the implementing agency is notified.</p>





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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
9-17. (continued)	<p>Verify that within 6 mo of repair, tanks with cathodic protection systems are tested as follows:</p> <ul style="list-style-type: none"><li>- every 3 yr thereafter for all cathodic protection systems</li><li>- every 60 days for impressed current cathodic protection systems.</li></ul> <p>Verify that records of repairs are maintained for the life of the tank.</p>



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<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>General</b></p> <p><b>9-18.</b> Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection (40 CFR 280.10(d), 280.40, and 280.45).</p>	<p>Verify that the installed release detection system can detect a release from any portion of the tank and the connected underground piping.</p> <p>Verify that the appropriate schedule has been complied with (see Appendix 9-2).</p> <p>(NOTE: Any pressurized delivery lines must be retrofitted by 22 December 1990.)</p> <p>(NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators.)</p> <p>Verify that records are kept as follows:</p> <ul style="list-style-type: none"> <li>- all written performance claims pertaining to any release detection system used for 5 yr from the date of installation</li> <li>- the results of any sampling testing or monitoring for 1 yr except the tank tightness results are kept until the next tank tightness test</li> <li>- the results of tank tightness testing, until the next test is done</li> <li>- written documentation of calibration, maintenance, repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done</li> <li>- schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation.</li> </ul>



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UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>Petroleum USTs</b></p> <p>9-19. UST systems containing petroleum must meet specific release detection system requirements (40 CFR 280.41, 280.43, and 280.44).</p>	<p>Verify that tanks are monitored every 30 days using one of the following methods (details of methods are provided in Appendix 9-3):</p> <ul style="list-style-type: none"> <li>- tank automatic gauging</li> <li>- vapor monitoring</li> <li>- groundwater monitoring</li> <li>- interstitial monitoring</li> <li>- other acceptable methods.</li> </ul> <p>(NOTE: The following are exceptions:</p> <ul style="list-style-type: none"> <li>- UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed</li> <li>- UST systems which do not meet performance standards for new or upgraded systems, may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed</li> <li>- tanks which hold less than 550 gal [2081.98 L] may use weekly tank gauging.)</li> </ul> <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done as described in Appendix 9-3:</p> <ul style="list-style-type: none"> <li>- pressurized piping <ul style="list-style-type: none"> <li>- equipped with automatic line leak detector</li> <li>- annual tightness testing or monthly monitoring.</li> </ul> </li> <li>- suction piping <ul style="list-style-type: none"> <li>- line tightness testing every 3 yr or monthly monitoring</li> <li>- no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> <li>- operates at less than atmospheric pressure</li> <li>- is sloped so that contents of pipe will roll back to tank when suction is released</li> <li>- only one check valve is included in each suction line</li> <li>- check valve is located directly below and as close as practical to the suction pump.</li> </ul> </li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:**  
**UNDERGROUND STORAGE TANK (UST) MANAGEMENT**  
**Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**9-19. (continued)**

(NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators.)

**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>Hazardous Substance USTs</b></p> <p><b>9-20.</b> Hazardous substance USTs must meet specific release detection standards (40 CFR 280.42(a), 280.43, and 280.44).</p>	<p>Verify that tanks are monitored every 30 days using one of the following methods (details of methods are provided in Appendix 9-3):</p> <ul style="list-style-type: none"> <li>- tank automatic gauging</li> <li>- vapor monitoring</li> <li>- groundwater monitoring</li> <li>- interstitial monitoring</li> <li>- other acceptable methods.</li> </ul> <p>(NOTE: The following are exceptions:</p> <ul style="list-style-type: none"> <li>- UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed</li> <li>- UST systems which do not meet performance standards for new or upgraded systems, may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed</li> <li>- tanks which hold less than 550 gal [2081.98 L] may use weekly tank gauging.)</li> </ul> <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done as described in Appendix 9-3:</p> <ul style="list-style-type: none"> <li>- pressurized piping <ul style="list-style-type: none"> <li>- equipped with automatic line leak detector</li> <li>- annual tightness testing or monthly monitoring</li> </ul> </li> <li>- suction piping <ul style="list-style-type: none"> <li>- line tightness testing every 3 yr or monthly monitoring</li> <li>- no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> <li>- operates at less than atmospheric pressure</li> <li>- is sloped so that contents of pipe will roll back to tank when suction is released</li> <li>- only one check valve is included in each suction line</li> <li>- check valve is located directly below and as close as practical to the suction pump.</li> </ul> </li> </ul> </li> </ul>

**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>9-21.</b> Hazardous substance USTs must meet specific release detection standards by 22 December 1998 (40 CFR 280.42(b), 280.43, and 280.44).</p>	<p>Verify that existing hazardous substance USTs meet the requirements for new hazardous substance USTs by 22 December 1998 as stated below:</p> <ul style="list-style-type: none"> <li>- secondary containment is checked for evidence of a release at least every 30 days and is designed and constructed to:             <ul style="list-style-type: none"> <li>- contain regulated substances released until they are detected and removed</li> <li>- prevent releases of regulated substance to the environment at any time during the operational life of the UST</li> </ul> </li> <li>- double-walled tanks are designed, constructed, and installed to:             <ul style="list-style-type: none"> <li>- contain releases from any portion of the inner tank within the outer-wall</li> <li>- detect failure of the inner wall</li> </ul> </li> <li>- external liners, including vaults, are designed, constructed, and installed in such a manner that:             <ul style="list-style-type: none"> <li>- 100 percent of the capacity of the largest tank is contained within its boundary</li> <li>- the interference of precipitation or groundwater intrusion is prevented with the ability to contain or detect release of regulated substances</li> <li>- the tank is completely surrounded.</li> </ul> </li> </ul> <p>Verify that underground piping is equipped with secondary containment which satisfies the requirements for UST secondary containment.</p> <p>Verify that piping which delivers regulated substances under pressure is equipped with an automatic line leak detector.</p> <p>Verify that when other release detection methods are used, they are approved by the implementing agency.</p>

**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>RELEASE DETECTION FOR USTs</b></p> <p><b>USTs Connected to Emergency Generators</b></p> <p>9-22. UST systems containing fuel used solely for emergency generators should meet specific release detection system requirements (GMP).</p>	<p>Verify that tanks are monitored every 30 days using the method in Appendix 9-3 except for:</p> <ul style="list-style-type: none"> <li>- UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed</li> <li>- UST systems which do not meet performance standards for new or upgraded systems, may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed</li> <li>- tanks which hold less than 550 gal [2089.98 L] may use weekly tank gauging.</li> </ul> <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done according to the methods in Appendix 9-3:</p> <ul style="list-style-type: none"> <li>- pressurized piping <ul style="list-style-type: none"> <li>- equipped with automatic line leak detector</li> <li>- annual tightness testing or monthly monitoring</li> </ul> </li> <li>- suction piping <ul style="list-style-type: none"> <li>- line tightness testing every 3 yr or monthly monitoring</li> <li>- no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> <li>- operates at less than atmospheric pressure</li> <li>- is sloped so that contents of pipe will roll back to tank when suction is released</li> <li>- only one check valve is included in each suction line</li> <li>- check valve is located directly below and as close as practical to the suction pump.</li> </ul> </li> </ul> </li> </ul>





**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>UST RELEASES</b></p> <p><b>9-23.</b> Facilities with UST systems are required to report releases under specific conditions (40 CFR 280.50).</p> <p><b>9-24.</b> Installations must investigate and confirm all suspected releases of a regulated substances requiring reporting within 7 days unless a corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 (40 CFR 280.52).</p> <p><b>9-25.</b> Facilities with a confirmed release from petroleum or hazardous substance USTs are required to perform specific initial response actions within 24 h of a release (40 CFR 280.60 and 280.61).</p>	<p>Determine if the facility has reported any and all releases which met the following criteria:</p> <ul style="list-style-type: none"> <li>- released regulated substances were found at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface waters)</li> <li>- unusual operating conditions were observed such as the erratic behavior of dispensing equipment or a sudden loss of product unless it is determined the problem lies in the equipment but it is not leaking and is immediately repaired or replaced</li> <li>- monitoring results indicate a possible release.</li> </ul> <p>Verify that the implementing agency was notified within 24 h (or time period specified by the implementing agency) of the release.</p> <p>Verify that tightness testing is done within 7 days of a suspected release to determine whether a leak is in the tank or the delivery piping.</p> <p>Verify that if environmental contamination is the basis for suspecting a leak, and the tightness test does not indicate that a leak exists, a site check is done that measure for the presence of a release in the areas where contamination is most likely to be present.</p> <p>(NOTE: If the results indicate that a leak has occurred, corrective actions must be started.)</p> <p>(NOTE: If the tightness test does not indicate a leak and environmental contamination is not the basis for suspecting a release, no further investigation is needed.)</p> <p>Verify that facility personnel are aware of the following initial response actions:</p> <ul style="list-style-type: none"> <li>- the release is reported</li> <li>- immediate action is taken to prevent further release of the regulated substance into the environment</li> <li>- fire, explosion, and vapor hazards are identified and mitigated.</li> </ul> <p>(NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.)</p>

<b>COMPLIANCE CATEGORY:</b> <b>UNDERGROUND STORAGE TANK (UST) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<b>9-25. (continued)</b>	<p>(NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)</p>
<p><b>9-26. Facilities with a confirmed release from petroleum or hazardous substance UST are required to perform specific initial abatement measures and site checks unless directed to do otherwise by the implementing agency (40 CFR 280.60 and 280.62).</b></p>	<p>Verify that the following actions are performed:</p> <ul style="list-style-type: none"> <li>- as much of the substance as is necessary to prevent further release is removed from the UST system</li> <li>- visual inspection of aboveground releases or exposed belowground releases is done and further migration of the released substance into surrounding soils and groundwaters is prevented</li> <li>- monitoring and mitigation of any fire and safety hazards caused by vapors or free product is done</li> <li>- hazards from contaminated soils that are excavated or exposed are remedied</li> <li>- measurements are done for the presence of a release where the contamination is most likely to be present unless the presence and source of the release has previously been confirmed</li> <li>- an investigation is done for the presence of free product and the removal of free product is done as soon as possible.</li> </ul> <p>Verify that within 20 days after release confirmation a report is submitted to the implementing agency summarizing the initial abatement measures and site checks and the resulting information and data collected.</p> <p>(NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.)</p> <p>(NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)</p>

**COMPLIANCE CATEGORY:**  
**UNDERGROUND STORAGE TANK (UST) MANAGEMENT**  
**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p>9-27. Facilities with a confirmed release from petroleum or hazardous substance UST are required to assemble information about the site and nature of the release unless exempted by the implementing agency (40 CFR 280.60 and 280.63).</p>	<p>Verify that the following information is collected:</p> <ul style="list-style-type: none"> <li>- data on the nature and estimated quantities of the release</li> <li>- data from available sources and/or site investigations concerning surrounding population, water quality, use and approximate locations of wells potentially affected, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use</li> <li>- results of site check</li> <li>- results of free product investigation.</li> </ul> <p>Verify that within 45 days of the release confirmation this information is submitted to the implementing agency in a manner that demonstrates the applicability and technical adequacy or according to a format required by the implementing agency.</p> <p>(NOTE: These requirements do not apply to excluded USTs (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.)</p> <p>(NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST holding a hazardous material at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)</p>
<p>9-28. Facilities with a confirmed release from petroleum or hazardous substance USTs where site investigations have indicated free product must, to the maximum extent possible as required by the implementing agency, remove the free product (40 CFR 280.60 and 280.64).</p>	<p>Determine if there are any release sites at the facility where free product has been confirmed.</p> <p>Verify that free product removal is done so that the spread of contamination is minimized.</p> <p>Verify that, unless exempted by the implementing agency, within 45 days after confirming a release, a free product removal report is submitted to the implementing agency that includes the following:</p> <ul style="list-style-type: none"> <li>- the name of the person responsible for implementing the free product removal system</li> <li>- the estimated quantity, type, and thickness of free product observed or measured</li> <li>- the type of free product recovery system used</li> <li>- whether there will be any onsite or offsite discharges during the recovery operation and where this discharge will be located</li> <li>- the type of treatment used for any discharge during the recovery operation and where this discharge will be located</li> <li>- the steps taken to obtain any required permits</li> <li>- the disposition of the recovered free product.</li> </ul>



**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS:**

**REVIEWER CHECKS:**

**DEFERRED UST  
SYSTEMS**

9-30. Deferred UST systems (see definition) are required to meet specific standards (40 CFR 280.10(c) and 280.11).

Verify that deferred UST systems (whether single or double-walled) are not installed to store regulated substances unless:

- releases due to corrosion or structural failure will be prevented for the operational life of the system
- they are cathodically protected against corrosion, constructed of noncorrodible materials, steel clad with a noncorroding material, or designed to prevent release
- they are constructed or lined with material that is compatible with the stored substance.

Verify that deferred systems meet the standards concerning release response and action for USTs containing petroleum or a hazardous substance found in 40 CFR 280.60 through 280.67 (see checklist items 9-24 through 9-29).



**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>UST DOCUMENTATION</b></p> <p><b>9-31.</b> Facilities with USTs are required to meet specific reporting requirements (40 CFR 280.34(a)).</p> <p><b>9-32.</b> Facilities with USTs are required to meet specific record-keeping requirements (40 CFR 280.34(b), 280.34(c), and 280.74).</p>	<p>Verify that the facility has submitted the following when applicable:</p> <ul style="list-style-type: none"> <li>- notifications of new USTs</li> <li>- release reports</li> <li>- planned or complete corrective actions</li> <li>- notice of closure or change-in-service.</li> </ul> <p>Verify that records are kept of the following:</p> <ul style="list-style-type: none"> <li>- a corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used</li> <li>- documentation of operation of corrosion protection equipment</li> <li>- documentation of repairs</li> <li>- closure records</li> <li>- results of any site investigations.</li> </ul> <p>Verify that records are available at one of the following:</p> <ul style="list-style-type: none"> <li>- at the UST site and immediately available for inspection</li> <li>- at a readily available alternative site and provided for inspection.</li> </ul>





**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>CHANGES-IN-SERVICE OR CLOSURE OF USTs</b></p> <p><b>9-33.</b> USTs which are put out-of-service temporarily, must have continued maintenance (40 CFR 280.70).</p> <p><b>9-34.</b> Notification must be given to the implementing agency (USEPA) for any closure or change-in-service 30 days in advance or within a reasonable time frame as determined by the implementing agency (40 CFR 280.71(a)).</p>	<p>Determine if the facility has any out-of-service USTs.</p> <p>Verify that proper maintenance is being performed for the following:</p> <ul style="list-style-type: none"> <li>- corrosion protection</li> <li>- release detection.</li> </ul> <p>Verify that, if the UST has been out-of-service for near or over 1 yr, plans have been made for permanent closure.</p> <p>(NOTE: If the UST is empty, release detection is not required.)</p> <p>(NOTE: An empty UST is one which has no more than 2.5 cm (1 in.) of residue or less than 0.3 percent by weight of total capacity of the UST system.)</p> <p>Verify that, if a UST system is closed for 3 mo or more, the vent lines are open and functioning and all other lines, pumps, manways, and ancillary equipment is capped and secured.</p> <p>Verify that, if the UST has been out of service for more than 12 mo and does not meet the standards for new or upgraded USTs, it is permanently closed unless the implementing agency has provided an extension.</p> <p>Determine if the facility is planning to close or change any USTs.</p> <p>Verify that notification of changes were given within 30 days.</p>

**COMPLIANCE CATEGORY:  
UNDERGROUND STORAGE TANK (UST) MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>9-35.</b> UST closure must be done in one of the following methods:</p> <ul style="list-style-type: none"> <li>- it is removed from the ground</li> <li>- it is left in place with substance removed, and filled with an inert solid material and closing it to all future outside access (40 CFR 280.71(b)).</li> </ul>	<p>Determine if there are any closed USTs or USTs in the process of being closed at the facility.</p> <p>Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges.</p> <p>Determine if there are any possible abandoned USTs and if there are plans to close the UST off in an appropriate manner.</p> <p>Determine if a site assessment was made to ensure that no releases to the environment have occurred by reviewing records.</p>
<p><b>9-36.</b> Prior to a change-in-service, tanks must be emptied and cleaned and a site assessment conducted (40 CFR 280.71(c)).</p>	<p>Determine if there are any tanks which the facility has continued to use to store a nonregulated substance (a change-in-service).</p> <p>Verify that prior to the change, the tank was emptied and cleaned.</p> <p>Verify that prior to the change, a site assessment was done.</p>
<p><b>9-37.</b> Prior to permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site (40 CFR 280.72).</p>	<p>Verify that measurements for the presence of a release have been done.</p> <p>(NOTE: These requirements are met if one of the leak detection methods outlined in 40 CFR 280.43(e) and 280.43(f) has occurred (see checklist item 9-19 through 9-21).)</p>

<b>COMPLIANCE CATEGORY:</b> <b>UNDERGROUND STORAGE TANK (UST) MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS:</b>	<b>REVIEWER CHECKS:</b>
<p><b>9-38.</b> Facilities with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.73).</p>	<p>Determine if the facility has any USTs which were closed prior to 22 December 1988.</p> <p>Verify that the excavation zone of these USTs has been assessed and cleanup has been done as needed.</p>
<p><b>9-39.</b> Excavation zone assessment records shall be maintained for 3 yr (40 CFR 280.74).</p>	<p>Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways:</p> <ul style="list-style-type: none"> <li>- by the facility</li> <li>- at the implementing agency if they cannot be maintained at the closed facility.</li> </ul>



# **Appendix 9-1** **UST Applicability Guide**

<b>Type of UST</b>	<b>Applicable CFR Citation</b>	<b>Checklist #'s</b>
Underground Storage Tanks as defined in 40 CFR 280.12 (see definitions)	40 CFR 280	all
Excluded USTs (see definitions)	none	
Deferred USTs (see definitions)	40 CFR 280.11	9-30
USTs storing fuel for emergency generators	40 CFR 280.20 through 280.22	9-6 through 9-10
	280.30 through 280.34	9-11, 9-14 through 9-17, 9-31 and 9-32
	280.50 through 280.53	9-15, 9-23, 9-24
	280.60 through 280.67	9-25 through 9-29
	280.70 through 270.74	9-32 through 9-39



## Appendix 9-2

### Schedule for Phase-In of Release Detection

Year system was installed	Year when release detection is required (by 22 December of the year indicated)				
	1989	1990	1991	1992	1993
Before 1965 or date unknown.	RD	P			
1965-69		P/RD			
1970-74		P	RD		
1975-79		P		RD	
1980-88		P			RD

P = must begin release detection for all pressurized piping as defined in 40 CFR 280.41(b)(1).

RD = must begin release detection for tanks and suction piping.





## Appendix 9-3

### Release Detection Requirements for USTs and Underground Piping (40 CFR 280.41 through 280.43)

#### A. UST Options (see NOTE for additional guidance)

- 1. Inventory control:** Product inventory control must be conducted monthly to detect a release of at least 1.0 percent of flow-through plus 130 gal on a monthly basis in the following manner:
  - i. inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day
  - ii. the equipment used is capable of measuring the level of product over the full range of the tanks height to the nearest one-eighth of an inch
  - iii. the regulated substance inputs are reconciled with delivery receipts by measurements of the tank inventory volume before and after delivery
  - iv. deliveries made through a drop tube that extends to within one foot of the tank bottom
  - v. product dispensing is metered and recorded within the local standards of product withdrawn
  - vi. the measurement of any water level in the bottom of the tank is made to the nearest one-eighth of an inch at least once a month.
- 2. Manual gauging:** manual tank gauging must meet the following requirements:
  - i. tank liquid level measurements are taken at the beginning and end of a period of at least 36 h during which no liquid is added to or removed from the tank
  - ii. level measurements are based on an average of two consecutive stick readings at both the beginning and end of the period
  - iii. the equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch
  - iv. a leak is suspected and subject to the requirements of subpart E if the variation between beginning and ending measurements exceeds the weekly or monthly standards of Table A below
  - v. only tanks of 550 gal or less nominal capacity may use this as a sole method of release detection. Tanks of 551 to 2000 gal may also use inventory control (see paragraph 1 in this appendix). Tanks of greater than 2000 gal nominal capacity may not use this method to meet release detection requirements.

**Table A**

Nominal Tank Capacity	Weekly Standard (one test)	Monthly Standard (average of four)
550 gal or less	10 gal	5 gal
551-1000 gal	13 gal	7 gal
1001-2000 gal	26 gal	13 gal

(continued)

### Appendix 9-3 (continued)

3. **Tank tightness testing:** Tank tightness testing must be capable of detecting a 0.1 gal/h leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.
4. **Tank automatic gauging:** Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control; must meet the following requirements:
  - i. the automatic product level monitor test can detect a 0.2 gal/h leak rate from any portion of the tank that routinely contains product
  - ii. inventory control is conducted according to requirements (see para 1 above).
5. **Vapor monitoring:** Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:
  - i. the materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to easily allow diffusion of vapors from releases into the excavation area
  - ii. the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank
  - iii. the measurement of vapors by the monitoring device is not rendered inoperative by the groundwater, rainfall, or soil moisture or other unknown interferences so that a release could go undetected for more than 30 days
  - iv. the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank
  - v. the vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system
  - vi. in the UST excavation zone, the site is assessed to ensure compliance with the requirements of paragraph 5 subparagraph i through iv above and to establish the number and positioning of monitor wells that will detect any releases within the excavation zone from any portion of the tank that routinely contains product
  - vii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
6. **Groundwater monitoring:** Testing or monitoring for liquids in the groundwater must meet the following requirements:
  - i. the regulated substance stored is immiscible in water and has a specific gravity of less than one
  - ii. groundwater is never more than 20 ft from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/s (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts, or other permeable materials
  - iii. the slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low groundwater conditions
  - iv. monitoring wells should be sealed from the ground surface to the top of the filter pack
  - v. monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible

(continued)

### Appendix 9-3 (continued)

- vi. the continuous monitoring devices or manual methods used can detect the presence of at least one-eighth of an inch of free product on top of the groundwater in the monitoring wells
  - vii. within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements of paragraphs 6 i-v above and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product
  - viii. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
- 7. Interstitial monitoring:** Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:
- i. for double-walled systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product
  - ii. for UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier
    - a. the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least  $10^{-6}$  cm/s for the regulated substance stored) to direct a release to the monitoring point and permit its detection
    - b. the barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected
    - c. for cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system
    - d. the groundwater, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days
    - e. the site is assessed to ensure that the secondary barrier is always above the groundwater and not in a 25 yr flood plain, unless the barrier and monitoring designs are for use under such conditions
    - f. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.
  - iii. for tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner. The liner is compatible with the substance stored.
- 8. Other methods:** Any other type of release detection method, or combination of methods, can be used if:
- i) it can detect a 0.2 gal/h leak rate or a release of 150 gal within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05
  - ii) the implementing agency may approve another method, if it can be demonstrated that this method can detect releases as effectively as the methods listed in this appendix

(continued)

## Appendix 9-3 (continued)

NOTE: The following are alternatives on the above listings for UST release detection options:

1. USTs meeting the requirements in 40 CFR 280.20 for new tanks (see checklist items 9-7 through 9-10) and the monthly inventory requirements in A1 and A2 above can use tank tightness testing as outlined in A3 at least every 5 yr until 22 December 1998, or until 10 yr after the tank is installed or upgraded under 40 CFR 280.21(b) (see checklist item 9-6)
2. USTs that do not meet the standards of 40 CFR 280.20 or 280.21 (see checklist items 9-20 through 9-22) may use monthly inventory as outlined in A1 or A2 and annual tank tightness testing done according to A3 until 22 December 1998 when the tank must be upgraded or permanently closed.
3. USTs with a capacity of 550 gal or less may use weekly tank gauging done according to A2.)

### B. Underground Piping Options

1. **Automatic line detectors:** Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping, or triggering an audible or visual alarm may be used only if they detect leaks of 3 gal/h at 10 lb/in.<sup>2</sup> line pressure within one hour. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.
2. **Line tightness testing:** A periodic test of piping may be conducted only if it can detect a 0.1 gal/h leak one and one-half times the operating pressure.
3. **Applicable tank methods:** The methods outlined in A2 through A4 may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

(NOTE: The following is additional information on the above listings for underground piping release detection options:

1. Pressurized piping must meet both of the following:
  - a. be equipped with an automatic line leak detector as outlined in B1
  - b. have an annual line tightness test done according to B2 or have monthly monitoring done in accordance with B3
2. Underground suction piping must either have a line tightness test done according to B2 at least every 3 yr or use a monthly monitoring method in accordance with B3. No release detection is required for suction piping that is designed and constructed to meet the following standards:
  - a. the belowgrade piping operates at less than atmospheric pressure
  - b. the belowgrade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released
  - c. only one check valve is included in each suction line
  - d. the check valve is located directly below and as close as practical to the suction pump
  - e. a method is provided that allows compliance with these standards to be readily determined.)

<b>INSTALLATION:</b>	<b>COMPLIANCE CATEGORY:</b> <b>UNDERGROUND STORAGE TANK (UST)</b> <b>MANAGEMENT</b> <b>Fish and Wildlife Service</b>	<b>DATE:</b>	<b>REVIEWER(S):</b>
<b>STATUS</b> <b>NA      C      RMA</b>	<b>REVIEWER CHECKS:</b>		

## **SECTION 10**

### **WASTEWATER MANAGEMENT**

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**The contents of this section are the minimum requirements the assessor must review. The assessor must also review applicable state and local regulations.**

## SECTION 10

### WASTEWATER MANAGEMENT

#### A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with wastewater discharge at FWS facilities. Wastewater discharge can include any of the following:

1. sanitary wastewater discharge directly to a receiving stream, or through an FWS treatment facility
2. sanitary or industrial wastewater discharge to a publicly owned treatment works (POTW) or other non-FWS facility
3. stormwater runoff from operational areas of the facility to a receiving stream or water body
4. industrial or storm wastewater drained to an industrial waste reservoir.

Most FWS facilities have wastewater discharge of one kind or another, and therefore, this section will be applicable to most facilities.

#### B. Federal Legislation

- *The Federal Water Pollution Control Act.* This Act, commonly known as the *Clean Water Act (CWA)*, as amended 4 February 1987, 33 U.S. Code (USC) 1251-1387, Public Law (PL) 100-4, governs the control of water pollution in the nation. The objective of the Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Federal agencies are required to comply with all Federal, state, interstate, and local water pollution control requirements both substantively and procedurally (33 USC 1323(a)).
- *Executive Order (EO) 12088, Federal Compliance with Pollution Standards.* This EO of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or to correct situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

#### C. State/Local Regulations

States normally have wastewater discharge legislation and regulations which require permitting similar to the National Pollution Discharge Elimination System (NPDES) program. The state is often delegated authority to administer the NPDES permits for discharges in their state. These permits are often joint permits issued pursuant to both Federal CWA and state legislation. In some cases, the state will not administer the NPDES program and will issue a state permit even though a NPDES permit has been issued by the U.S. Environmental Protection Agency (USEPA). The states and the USEPA normally cooperate in the

permit issuance process to insure that the two permits are consistent, but there may be differences in monitoring requirements and the number of pollutants limited. These requirements normally do not conflict, but may require additional sampling and dual reporting.

States also have more stringent requirements for wastewater treatment plant operations. Many states have sewage treatment plant (STP) operator licensing and certification programs which require that an operator pass an exam and have a required amount of experience.

Local entities (counties, cities) may also have enforceable wastewater discharge limitations which regulate discharges to a POTW. Local limitations often include pH, temperature, and concentrations of various organic and inorganic compounds. Major industrial operations which discharge to an offsite POTW will be subjected to pretreatment permits issued by the POTW, state, or USEPA as appropriate.

#### **D. Key Compliance Requirements**

- **NPDES Permits** - Facilities with point source discharges and/or treatment works treating domestic sewage are required to have a Federal NPDES permit if located in states without a USEPA approved NPDES permit program. Facilities that are dischargers of stormwater associated with an industrial activity are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit. Facilities must meet the sampling requirements stipulated by NPDES permits (40 CFR 122.1(b)(3) and 122.26(c)).
- **Treatment Works** - Facilities must not discharge into a treatment works any pollutant that would cause pass through or interference. Facilities shall not introduce pollutants into a treatment works that create a fire or explosion hazard, cause corrosive structural damage, have a pH below 5.0, or are solid or viscous enough to cause obstructions. Facilities are required to notify the treatment works immediately of any discharge, including any slug loadings, that could cause problems to the treatment works (40 CFR 403.5 and 403.12(f)).
- **Operation and Maintenance of a Treatment Works** - Treatment plant supervisors are required to maintain operating logs and records that are posted daily and are neat and legible. Treatment plants are required to be operated in accordance with all design parameters (40 CFR 403.12(f)).
- **Effluent Limitations for Steam Electric Power Generating Sources** - Facilities that have steam electric power generating sources must meet point source effluent limitations. Of special concern is the discharge of free available chlorine and total residual chlorine. Additionally, there must be no discharge of polychlorinated biphenyls (PCBs). There are additional standards depending on if the source is a new or an existing source (40 CFR 423).
- **Effluent Limits for Electroplating Point Sources** - Facilities that have existing electroplating operations that introduce pollutants into a POTW resulting from the electroplating of common metals are subject to pretreatment standards which vary depending upon the level of discharge and the nature of the metals used (40 CFR 413).



- **Effluent Limitation for Metal Finishing Point Sources** - Facilities that have shops performing electroplating, electroless plating, anodizing, coating, chemical etching and milling, and printed circuit board manufacturing are subject to certain best available technology (BAT) point source effluent limitations, which include the self-monitoring of cyanide. Facilities that introduce pollutants from existing metal finishing point sources into POTWs are subject to certain pretreatment standards. Facilities that introduce pollutants from new metal finishing point sources into POTWs are subject to certain performance and pretreatment standards (40 CFR 433).
- **Land Application of Sludge** - 40 CFR 503 details the pollutant concentrations, cumulative loading rates, and other restrictions pertinent to the land application of sludge that is generated during the treatment of domestic sludge in a treatment works.
- **Surface Disposal of Sewage Sludge** - The operation, management, monitoring, and closure requirements for units used for the surface disposal of sewage sludge are outlined in 40 CFR 503.20 through 503.28.
- **Incineration of Sewage Sludge** - Facilities with incinerators that fire sewage sludge must meet specific emissions standards for beryllium emissions, mercury emissions, and hydrocarbons. The incinerators are required to have continuous monitoring devices for hydrocarbons and oxygen in the exit gas, and continuous monitoring for combustion temperature as specified by the permitting authority. Assorted reports are required to be submitted and records kept (40 CFR 503.40 through 503.48).
- **Recordkeeping** - Regardless of the regulatory requirements concerning the length of time which records must be kept, it is advisable to maintain records beyond the regulated periods of time in order to support FWS compliance.

#### **E. Key Compliance Definitions**

- **Active Sewage Sludge Unit** - a sewage sludge unit that has not closed (40 CFR 503.21(a)).
- **Aerobic Digestion** - the biochemical decomposition of organic matter in sewage sludge into CO<sub>2</sub> and water by microorganisms in the presence of air (40 CFR 503.31(a)).
- **Agricultural Land** - land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture (40 CFR 503.11(a)).
- **Agronomic Rate** - the whole sludge application rate (dry weight basis) designed (40 CFR 503.11(b)):
  1. to provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land
  2. to minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater.
- **Air Pollution Control Device** - one or more processes used to treat the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(a)).

- **Anaerobic Digestion** - the biochemical decomposition of organic matter in sewage sludge into methane gas and CO<sub>2</sub> by microorganisms in the absence of air (40 CFR 503.31(b)).
- **Annual Pollutant Loading Rate** - the maximum amount of a pollutant that can be applied to a unit area of land during a 365 day period (40 CFR 503.11(c)).
- **Annual Whole Sludge Application Rate** - the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365 day period (40 CFR 503.11(d)).
- **Apply Sewage Sludge or Sewage Sludge Applied To The Land** - means land application of sewage sludge (40 CFR 503.9(a)).
- **Aquifer** - a geologic formation, group of geologic formations, or a portion of a geologic formation capable of yielding groundwater to wells or springs (40 CFR 503.21(b)).
- **Auxiliary Fuel** - fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel (40 CFR 503.41(b)).
- **Base Flood** - a flood that has a 1 percent chance of occurring in any given year (i.e., a flood with a magnitude equalled once in 100 yr) (40 CFR 503.9(b)).
- **Blowdown** - the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentrations in amounts exceeding limits established by best engineering practice (40 CFR 401.11(p)).
- **Bulk Sewage Sludge** - sewage sludge that is not sold or given away in a bag or other container for application to the land (40 CFR 503.11(e)).
- **Chemical Metal Cleaning Waste** - any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning (40 CFR 423.11).
- **Class 1 Sludge Management Facility** - any POTW, as defined in 40 CFR 501.2, required to have an approved pretreatment program under 40 CFR 403.8(a) (including any POTW located in a state that has elected to assume local program responsibilities pursuant to 40 CFR 403.10(e)) and any treatment works treating domestic sewage, as defined in 40 CFR 122.2, classified as a Class 1 sludge management facility by the USEPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the state Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.
- **Class A Sludge** - when one of the following method is used, it is considered Class A with respect to pathogens:
  - **Alternative 1.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number/gram (MPN/g) of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3

MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The temperature of the sewage sludge that is used or disposed shall be maintained at a specific value for a period of time. When the percent solids of the sewage sludge is 7 percent or higher, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 20 min or longer; and the temperature and time period shall be determined using the following equation, except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

$$D = \frac{131,700,000}{10^{0.1400t}} \quad \text{Eq. (2)}$$

Where, D = time in days. t = temperature in °C.

When the percent solids of the sewage sludge is 7 percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 15 s or longer; and the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than 7 percent and the time period is at least 15 s, but less than 30 min, the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than 7 percent; the temperature of the sewage sludge is 50 °C [122 °F] or higher; and the time period is 30 min or longer, the temperature and time period shall be determined using the below equation.

$$D = \frac{50,070,000}{10^{0.1400t}} \quad \text{Eq. (3)}$$

Where, D = time in days. t = temperature in °C.

- **Alternative 2.** Either the density of fecal coliform in the sewage sludge is less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The pH of the sewage sludge that is used or disposed shall be raised to above 12 and shall remain above 12 for 72 h.

The temperature of the sewage sludge shall be above 52 °C [125.6 °F] for 12 h or longer during the period that the pH of the sewage sludge is above 12.

At the end of the 72 h period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50 percent.

- **Alternative 3.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.

When the density of enteric viruses in the sewage sludge prior to pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.

When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses when the density of enteric viruses in the sewage sludge after pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.

After the enteric virus reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains viable helminth ova.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than 1 per 4 g of total solids (dry weight basis), the

sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than 1 per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the viable helminth ova density requirement are documented.

After the viable helminth ova reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

- **Alternative 4.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f), unless otherwise specified by the permitting authority.

The density of viable helminth ova in the sewage sludge shall be less than 1 per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f), unless otherwise specified by the permitting authority.

- **Alternative 5.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

Sewage sludge that is used or disposed shall be treated in one of the Processes to Further Reduce Pathogens described in Appendix B of 40 CFR 503.

- **Alternative 6.** Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Further Reduce Pathogens, as determined by the permitting authority.

- **Class B Sludge** - when one of the following methods is used, it is considered Class A with respect to pathogens:
  - **Alternative 1.** Seven samples of the sewage sludge is collected at the time the sewage sludge is used or disposed. The geometric mean of the density of fecal coliform in the samples must be less than either 2 million MPN/g of total solids (dry weight basis) or 2 million Colony Forming Units (CFU)/g of total solids (dry weight basis).
  - **Alternative 2.** Sewage sludge that is used or disposed shall be treated in one of the Processes to Significantly Reduce Pathogens described in Appendix B of 40 CFR 503.
  - **Alternative 3.** Sewage sludge that is used or disposed is be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens, as determined by the permitting authority.
- **CN,A** - cyanide amenable to chlorination (40 CFR 413.02).
- **CN,T** - cyanide, total (40 CFR 413.02).
- **Contaminate An Aquifer** - to introduce a substance that causes the MCL for nitrate in 40 CFR 141.11 to be exceeded in groundwater or that causes the existing concentration of nitrate in groundwater to increase when the existing concentration of nitrate in the groundwater exceeds the maximum contaminant label for nitrate in 40 CFR 141.11 (40 CFR 503.21(c)).
- **Continuous Discharge** - a discharge which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 123.3).
- **Control Efficiency** - the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator (40 CFR 503.41(c)).
- **Cover** - soil or other material used to cover sewage sludge placed on an active sewage sludge unit (40 CFR 503.21(d)).

- **Cover Crop** - a small grain crop, such as oats, wheat, or barley, not grown for harvest (40 CFR 503.9(d)).
- **Cumulative Pollutant Loading Rate** - the maximum amount of an inorganic pollutant that can be applied to an area of land (40 CFR 503.11(f)).
- **Daily Discharge** - the discharge of a pollutant measured during a calendar day or any 24-h period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).
- **Density Of Microorganisms** - the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge (40 CFR 503.31(c)).
- **Direct Discharge** - the discharge of a pollutant (40 CFR 122.2).
- **Discharge of Pollutant** - the addition of any pollutant to navigable waters from any point source and any addition of any pollutant to the waters of the contiguous zone or the ocean zone or the ocean from any point source, other than from a vessel or other floating craft (40 CFR 401.11(h)).
- **Dispersion Factor** - the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack (40 CFR 503.41(d)).
- **Displacement** - the relative movement of any two sides of a fault measured in any direction (40 CFR 503.21(e)).
- **Domestic Septage** - either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receive either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant (40 CFR 257.2).
- **Domestic Sewage** - waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works (40 CFR 503.9(g)).
- **Effluent Limitations** - any restriction established by the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources, other than new sources, into navigable waters, the waters of the contiguous zone, or the ocean (40 CFR 401.11(i)).
- **Environmentally Sensitive Area** - an area of environmental importance which is in or adjacent to navigable waters (49 CFR 194.5).

- **Excluded Sludge** - The following are types of sludge and activities which are exempted from meeting the requirements outlined in 40 CFR 503:
  1. processes used to treat domestic sewage or processes used to treat sewage sludge prior to final use except for the standards on pathogen and vector reduction in 40 CFR 503.32 and 503.33
  2. sewage sludge co-fired in an incinerator with other wastes or for the incinerator in which sewage sludge and other waste are co-fired
  3. sludge generated at an industrial facility during the treatment of industrial wastewater, including sewage sludge generated during the treatment of industrial wastewater combined with domestic sewage
  4. sewage sludge determined to be hazardous
  5. sewage sludge with a concentration of PCBs equal to greater than 50 mg/kg of total solids (dry weight basis)
  6. ash generated during the firing of sewage sludge in a sewage sludge incinerator
  7. grit (i.e., sand, gravel, cinders, or other material with high specific gravity) or screenings (e.g., relatively large materials such as rags) generated during preliminary treatment of domestic sewage in a treatment works
  8. sludge generated during the treatment of either surface water or ground water used for drinking water
  9. commercial septage, industrial septage, a mixture of domestic septage and commercial septage, or a mixture of domestic septage and industrial septage (40 CFR 503.6).
- **Fault** - a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to strata on the other side (40 CFR 503.21(f)).
- **Feed Crops** - crops produced primarily for consumption by animals (40 CFR 503.9(j)).
- **Feedlot** - a concentrated, confined animal or poultry growing operation for meat, milk, or egg production, or stabling in pens or houses wherein the animals or poultry are fed at the place of confinement and crop or forage growth or production is not sustained in the area of confinement (40 CFR 412.11(b)).
- **Fiber Crops** - crops such as flax and cotton (40 CFR 503.9(k)).
- **Final Cover** - the last layer of soil or other material placed on a sewage sludge unit at closure (40 CFR 503.21(g)).
- **Fluidized Bed Incinerator** - an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas (40 CFR 503.41(e)).
- **Forest** - a tract of land thick with trees and underbrush (40 CFR 503.11(g)).
- **Good Management Practices (GMPs)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- **Holocene Time** - the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present (40 CFR 503.21(h)).



- *Hourly Average* - the arithmetic mean of all measurements, taken during 1 h. At least two measurements must be taken during the hour (40 CFR 503.41(f)).
- *Incineration* - the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device (40 CFR 503.41(g)).
- *Indirect Discharge* - the introduction of pollutants into a POTW from any nondomestic source regulated under section 307(b), (c), or (d) of the Act (40 CFR 403.3(g)).
- *Industrial Activities* - in relation to stormwater runoff, industrial activities include:
  1. facilities subject to stormwater effluent limitations guidelines, new source performance standards under 40 CFR subchapter N
  2. facilities classified as Standard Industrial Classification 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323) 35, 344, 373
  3. facilities classified as Standards Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations and oil and gas explorations, production, processing, or treatment operations, or transmission facilities that discharge stormwater contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate product, finished products, by-products or waste products located on the site of such operations
  4. hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under *Resource Conservation and Recovery Act* (RCRA), Subpart C
  5. landfills, land application sites, and open dumps that receive or have received industrial wastes, including those sites that are subject to Federal regulation
  6. facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but not limited to those classified as Standard Industrial Classification 5015 and 5093
  7. steam electric power generating facilities, including coal handling sites
  8. transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25, 43, 44, 45, and 5171) which have vehicle maintenance shops, equipment cleaning operations, or airport de-icing operations
  9. treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludges that are located within the confines of the facility with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program. Not included are farmlands, domestic gardens, or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA
  10. construction activity including clearing, grading, and excavation activities except operations that result in the disturbance of land less than 5 acres of total land area which are not part of a larger common plan of development or sale
  11. facilities under Standard Industrial Classifications 20,21,22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and which are not otherwise included in categories 1 - 10) (40 CFR 122.26(b)(14)(i) through 122.26(b)(14)(xi)).
- *Industrial User* - a source of indirect discharge (40 CFR 403.3(h)).

- **Industrial Wastewater** - wastewater generated in a commercial or industrial process (40 CFR 503.9(n)).
- **Integrated Facility** - a facility that performs electroplating as only one of several operations necessary for manufacture of a product at a single physical location and has significant quantities of process wastewater from nonelectroplating sources (40 CFR 413.02).
- **Interference** - a discharge which, alone or in conjunction with one or more discharges from other sources inhibits or disrupts the POTW and causes a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(i)).
- **Job Shop** - a facility which owns not more than 50 percent (annual area basis) of the materials undergoing metal finishing (40 CFR 433.11).
- **Land Application** - the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil (40 CFR 503.11(h)).
- **Land With a High Potential For Public Exposure** - land that the public uses frequently. This includes, but is not limited to, a public contact site and a reclamation site located in a populated area (e.g., a construction site located in a city) (40 CFR 503.31(d)).
- **Land With a Low Potential For Public Exposure** - land the public uses infrequently. This includes, but is not limited to, agricultural land, forest, and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area) (40 CFR 503.31(e)).
- **Leachate Collection System** - a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit (40 CFR 503.21(i)).
- **Liner** - soil or synthetic material that has a hydraulic conductivity of  $1 \times 10^{-7}$  cm/s [ $3 \times 10^{-8}$  in./s] or less (40 CFR 503.21(j)).
- **Lower Explosive Limit For Methane Gas** - the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 °C [77 °F] and atmospheric pressure (40 CFR 503.21(k)).
- **Metal Cleaning Wastes** - any wastewater resulting from cleaning (with or without chemical cleaning compounds) any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning (40 CFR 423.11).
- **Monthly Average** - the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month (40 CFR 503.41(h)).
- **Monthly Average** - the arithmetic mean of all measurements taken during the month (40 CFR 503.11(i)).
- **Municipality** - a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities: created

by or under state law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under section 208 of the CWA, as amended). The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in section 201(e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use, or disposal of sewage sludge. (40 CFR 503.9(o)).

- *National Pretreatment Standard* - any regulation containing pollutant discharge limits promulgated by the USEPA (40 CFR 403.3(j)).
- *Navigable Waters* - all navigable waters of the United States, tributaries of navigable waters of the United States, interstate waters, intrastate lakes, rivers, and streams which are utilized by interstate travelers for rivers, and streams which are utilized by interstate travelers for recreational or other purposes, intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce and intrastate lakes, rivers, and streams which are utilized for industrial purposes by industries in interstate commerce. Navigable waterways do not include prior converted cropland (40 CFR 401.11(l)).
- *New Source* - in relation to NPDES permits, any building, structure, facility, or installation from which there is or may be a discharge of pollutants the construction of which commenced (40 CFR 122.2 and 122.29(b)):
  1. after promulgation of standards of performance under section 306 of CWA which are applicable to such sources
  2. after proposal of standards of performance in accordance with section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal.

The following are the criteria for new source determination:

1. it is constructed at a site at which no other source is located
  2. it totally replaces the process or production equipment that causes the discharge of pollutants at an existing sources
  3. its processes are substantially independent of an existing source at the same site.
- *New Source* - any building, structure, facility, or installation from where there is or may be the discharge of pollutants, the construction of which is commenced after the publication of proposed regulations prescribing a standards of performance under section 306 of the CWA, which will be applicable to such source as such standards is thereafter promulgated in accordance with section 306 of the act (40 CFR 401.11(e)).
  - *Noncontact Cooling Water* - the water that is contained in a leak-free system, i.e., no contact with any gas, liquid, or solid other than the container for transport; the water shall have no net poundage addition of any pollutant over intake water levels (40 CFR 401.44(o)).
  - *NPDES Permit* - a permit granted by USEPA to a direct discharger which permits wastewater discharge to a watercourse in accordance with the conditions of the permit. NPDES means National Pollutant Discharge Elimination System (40 CFR 403.3(l)).

- ***Open Lot*** - pens or similar confinement areas with dirt, concrete (or paved or hard) surface wherein animals or poultry are substantially or entirely exposed to the outside environment except for possible small portions affording some protection by windbreaks, small shed-type shade areas (40 CFR 412.11(f)).
- ***Other Container*** - either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of 1 metric ton (1.1 short tons) or less (40 CFR 503.11(j)).
- ***pH*** - the logarithm of the reciprocal of the hydrogen ion concentration (40 CFR 503.31(g)).
- ***Pass Through*** - a discharge which exits the POTW into waters in quantities or concentrations which, alone or in conjunction with one or more discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(n)).
- ***Pasture*** - land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover (40 CFR 503.11(k)).
- ***Pathogenic Organisms*** - disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova (40 CFR 503.31(f)).
- ***Person*** - an individual, association, partnership, corporation, municipality, state or Federal agency, or an agent or employee thereof (40 CFR 503.9(q)).
- ***Person Who Prepares Sewage Sludge*** - either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge (40 CFR 503.9(r)).
- ***Place Sewage Sludge or Sewage Sludge Placed*** - means disposal of sewage sludge on a surface disposal site (40 CFR 503.9(s)).
- ***Point Source*** - any discernible confined and discrete conveyance including but not limited to a pipe, ditch, channel, or conduit from which pollutants are or may be discharged (40 CFR 401.11(d)).
- ***Pretreatment*** - the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW (40 CFR 403.3(q)).
- ***Process Generated Wastewater*** - in relation to feedlots, this is water directly or indirectly used in the operation of a feedlot for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other feedlot facilities; direct contact swimming, washing, or spray cooling or animals; and dust control (40 CFR 412.11(d)).
- ***Process Wastewater*** - any water which during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, or waste product (40 CFR 401.44(q)).

- *Process Wastewater for Feedlots* - any process generated wastewater and any precipitation (rain or snow) which comes into contact with any manure, litter, or bedding, or any other raw material or intermediate or final material or product used in or resulting from the production of animals or poultry or direct production (40 CFR 412.11(c)).
- *Public Contact Site* - land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses (40 CFR 503.11(l)).
- *Publicly Owned Treatment Works (POTW)* - a treatment works which is owned by the state or a municipality. This includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances only if they convey waste to a POTW (40 CFR 403.3(o)).
- *Qualified Groundwater Scientist* - an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in groundwater hydrology and related fields, as may be demonstrated by state registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding groundwater monitoring, pollutant fate and transport, and corrective action (40 CFR 503.21(l)).
- *Range Land* - open land with indigenous vegetation (40 CFR 503.11(m)).
- *Reclamation Site* - drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites (40 CFR 503.11(n)).
- *Risk Specific Concentration* - the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of the site where the sewage sludge incinerator is located (40 CFR 503.41(i)).
- *Runoff* - rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off of the land surface (40 CFR 503.9(v)).
- *Seismic Impact Zone* - an area that has a 10 percent or greater probability that the horizontal ground level acceleration of the rock in the area exceeds 0.10 gravity once in 250 yr (40 CFR 503.21(m)).
- *Sewage Sludge* - solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage, scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludges in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewerage in a treatment works (40 CFR 257.2).
- *Sewage Sludge Feed Rate* - either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365 day period that each sewage

sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located (40 CFR 503.41(j)).

- *Sewage Sludge Incinerator* - an enclosed device in which only sewage sludge and auxiliary fuel are fired (40 CFR 503.41(k)).
- *Sewage Sludge Unit* - land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 CFR 122.2 (40 CFR 503.21(n)).
- *Sewage Sludge Unit Boundary* - the outermost perimeter of an active sewage sludge unit (40 CFR 503.21(o)).
- *Specific Oxygen Uptake Rate (SOUR)* - the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the sewage sludge (40 CFR 503.31(h)).
- *Stack Height* - the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 m [213.25 ft]. When the difference is greater than 65 m [213.25 ft], stack height is the creditable stack height determined in accordance with 40 CFR 51.100(ii) (40 CFR 503.41(l)).
- *Store or Storage Of Sewage Sludge* - the placement of sewage sludge on land on which the sewage sludge remains for 2 yr or less. This does not include the placement of sewage sludge on land for treatment (40 CFR 503.9(y)).
- *Stormwater Discharge Associated with an Industrial Activity* - the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing or raw materials storage areas at any industrial plant. This does not include discharges from facilities excluded from the NPDES program. For the categories of industries identified in the definition for industrial activities, the item numbers 1 through 10, the term includes, but is not limited to stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste wastes; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. For item number 11 in the definition for industrial activities the term only includes only stormwater discharges from all the areas (except access roads and rail lines) that are listed in the previous sentence where materials handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to stormwater (40 CFR 122.26(b)(14)).

- **Strong Chelating Agents** - all compounds which, by virtue of their chemical structure and amount present, form soluble metal complexes which are not removed by subsequent metals control techniques such as pH adjustment followed by clarification or filtration (40 CFR 413.02).
- **Surface Disposal Site** - an area of land that contains one or more active sewage sludge units (40 CFR 503.21(p)).
- **TTO** - total toxic organics (40 CFR 413.02).
- **Total Hydrocarbons** - the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane (40 CFR 503.41(m)).
- **Total Metal** - the sum of the concentrations of mass of copper, nickel, chromium, and zinc (40 CFR 413.02).
- **Total Solids** - the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 °C [217.4 to 221 °F] (40 CFR 503.31(i)).
- **Treat or Treatment Of Sewage Sludge** - the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge (40 CFR 503.9(z)).
- **Treatment Works** - either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature (40 CFR 503.9(aa)).
- **Unstabilized Solids** - organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process (40 CFR 503.31(j)).
- **Unstable Area** - land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement (40 CFR 503.21(q)).
- **Vector Attraction** - the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents (40 CFR 503.31(k)).
- **Volatile Solids** - the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 °C [1022 °F] in the presence of excess air (40 CFR 503.31(l)).
- **Wet Electrostatic Precipitator** - an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(n)).

- ***Wetlands*** - those areas that are inundated or saturated by surface water or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 503.9(bb)).
- ***Wet Scrubber*** - an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(o)).



## **WASTEWATER MANAGEMENT**

### **GUIDANCE FOR CHECKLIST USERS**

	<b>REFER TO CHECKLIST ITEMS:</b>	<b>REFER TO PAGE NUMBER:</b>
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POTW/FOTW Operation	10-15	31
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## **WASTEWATER MANAGEMENT**

### **Records to Review**

- NPDES Permits
- NPDES Permit renewal applications (if expire within 180 days)
- Discharge monitoring reports for the past year
- Laboratory records and procedures and USEPA QA results
- Monthly operating reports for wastewater treatment facilities
- Flow monitoring calibration certification and supporting records
- Ash pond volume certification and supporting records
- Red water inspection records
- Special reports, certifications, etc., required by NPDES permit
- Spill Prevention Control and Countermeasure (SPCC) plan
- All records required by SPCC plan
- All notices of noncompliance
- All notices of violations
- NPDES state or Federal inspection reports
- Sewage treatment plant operator certification
- Administrative Orders
- Sewer and storm drain layout
- Local sewer ordinance
- Local service use permit
- Notification to local POTW
- Old Spill Reports
- Repair/Maintenance records for the wastewater treatment system
- As-Built Drawings
- Federal Facility Compliance Agreements
- Stormwater pollution prevention plan
- Pretreatment Permits

### **Physical Features to Inspect**

- Discharge outfall pipes
- Wastewater treatment facilities
- Industrial treatment facilities
- Streams, rivers, open waterways
- Floor and sink drains (especially in industrial areas)
- Stormwater collection points (especially in industrial areas)
- Oil storage tanks
- Oil/water separators
- Wastewater generation points



**COMPLIANCE CATEGORY  
WASTEWATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>ALL FACILITIES</b></p> <p><b>10-1.</b> Actions or changes since previous review of wastewater management should be examined (GMP).</p> <p><b>10-2.</b> Copies of all relevant Federal, FWS, state, and local regulations and guidance documents on wastewater management should be made available at the facility (GMP).</p> <p><b>10-3.</b> FWS facilities are required to comply with state and local wastewater regulations (EO 12088, Section 1-1).</p>	<p>Determine if noncompliance issues have been resolved by reviewing a copy of the previous report.</p> <p>Verify that copies of the following regulations are available and kept current:</p> <ul style="list-style-type: none"> <li>- EO 12088, <i>Federal Compliance with Pollution Control Standards.</i></li> <li>- 40 CFR 122, <i>EPA Administered Permit Programs: The National Pollutant Discharge Elimination System.</i></li> <li>- 40 CFR 136, <i>Guidelines Establishing Test Procedures for the Analysis of Pollutants.</i></li> <li>- 40 CFR 403, <i>General Pretreatment Standards for New and Existing Sources.</i></li> <li>- 40 CFR 413, <i>Electroplating Source Category.</i></li> <li>- 40 CFR 423, <i>Steam Electric Power Generating Point Source Category.</i></li> <li>- 40 CFR 433, <i>Metal Finishing Point Source Category.</i></li> <li>- 40 CFR 459, <i>Photographic Point Source Category.</i></li> <li>- 40 CFR 460, <i>Hospital Point Source Category.</i></li> <li>- 40 CFR 503, <i>Standards for the Use or Disposal of Sewage Sludge.</i></li> </ul> <p>Verify that the facility is complying with state and local water quality requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- nonpoint sources</li> <li>- NPDES permits</li> <li>- wastewater</li> <li>- monitoring and recordkeeping for NPDES permitted sources</li> <li>- certification requirements for laboratories analyzing samples</li> <li>- wastewater treatment plant operator certification</li> <li>- sludge disposal</li> <li>- pretreatment standards</li> <li>- discharges to sewage treatment facilities</li> <li>- industrial wastewater</li> <li>- septic tanks</li> <li>- stormwater pollution prevention plan</li> <li>- stormwater discharges.)</li> </ul>

**COMPLIANCE CATEGORY  
WASTEWATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-4.</b> Facilities will meet regulatory requirements issued since the finalization of the handbook (A finding under this checklist item will have the citation of the new regulation as a basis of finding).</p> <p><b>10-5.</b> FWS facilities should report all notices of violation (NOVs) to the Region and the Service Pollution Control Office (SPCO) (GMP).</p>	<p>Determine if any new regulations concerning wastewater have been issued since the finalization of the handbook.</p> <p>Verify that the facility is in compliance with newly issued regulations.</p> <p>Determine if the facility has received an NOV relating to wastewater management.</p> <p>Verify that the NOV was reported to the Region and the SPCO.</p>

**COMPLIANCE CATEGORY  
WASTEWATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>NPDES PERMITS</b></p> <p><b>10-6.</b> Facilities with point source discharges and/or treatment works treating domestic sewage are required to have a Federal NPDES permit if located in states without an USEPA approved NPDES permit program (40 CFR 122.1(b)(3)).</p> <p><b>10-7.</b> Facilities which are dischargers of stormwater associated with an industrial activity (see definitions) are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit (40 CFR 122.26(c)).</p> <p><b>10-8.</b> Samples must be collected in accordance with proper collection, testing, preservation, and shipping procedures in <i>Standard Methods for Water Analysis</i> (40 CFR 136.1 through 136.4).</p>	<p>Determine if the facility is located in a state with an USEPA approved NPDES permit program.</p> <p>Verify the facility has obtained the proper permits for point source discharges and/or treatment works treating domestic sewage.</p> <p>Verify that the facility is operating according to permit requirements such as:</p> <ul style="list-style-type: none"> <li>- monitoring/sampling</li> <li>- concentrations of discharge constituents</li> <li>- recordkeeping</li> <li>- report..</li> </ul> <p>(NOTE: The Regional Administrator may require the facility to have a permit for the use/disposal of sewage sludge as necessary to protect public health.)</p> <p>(NOTE: Stormwater runoff may be addressed in the NPDES permit.)</p> <p>Determine if the facility is discharging stormwater associated with an industrial activity.</p> <p>Verify that an application has been submitted for a permit.</p> <p>Verify that:</p> <ul style="list-style-type: none"> <li>- proper sample containers are used</li> <li>- samples are refrigerated during compositing</li> <li>- proper preservation techniques are used</li> <li>- flow-proportioned samples are obtained where required by permit</li> <li>- sample holding times prior to analyses conform with requirements.</li> <li>- the chain of custody is maintained from sampling point through analytic testing to results (essential if litigation occurs).</li> </ul> <p>Verify that results are reported in facility's self-monitoring report.</p>

<b>COMPLIANCE CATEGORY</b> <b>WASTEWATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<b>10-9.</b> Analytical testing must be done in accordance with USEPA approved analytical procedures (40 CFR 136.3).	Determine if: <ul style="list-style-type: none"> <li>- an USEPA approved analytical testing lab was used</li> <li>- proper approval was obtained from state/USEPA if alternate analytical procedures are used</li> <li>- parameters other than those required by the permit are analyzed</li> <li>- satisfactory calibration and maintenance of instruments and equipment is done</li> <li>- quality control procedures are used</li> <li>- duplicate samples are analyzed</li> <li>- spiked samples are used</li> <li>- a commercial laboratory is used</li> <li>- the commercial laboratory is state certified (states with formal certification program).</li> </ul>
<b>10-10.</b> Facilities with NPDES permits are required to meet specific reporting requirements (40 CFR 122.41(l)).	Verify that the facility gives notice to the USEPA or state Director as soon as possible of any planned physical alterations or additions to the permitted facility when: <ul style="list-style-type: none"> <li>- the alteration or addition might meet one of the criteria for determining if the facility is a new source (see definitions)</li> <li>- the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged (this applies to pollutants which are not subject to requirements on the permit or other notifications)</li> <li>- the alteration or addition results in a significant change in the facility's sludge use or disposal practices.</li> </ul> <p>Verify that the facility notifies the Director of any planned changes at the permitted facility or activity which may result in noncompliance with permit requirements.</p> <p>Verify that monitoring is reported as required on the permit.</p> <p>Determine if the facility is monitoring more frequently than required.</p> <p>Verify that if the facility is monitoring more frequently than required by permit these results are also being reported.</p> <p>Verify that reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule on the permit are submitted no later than 14 days following each specified date.</p>



<b>COMPLIANCE CATEGORY</b> <b>WASTEWATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<b>10-10. (continued)</b>	<p>Verify that noncompliance which might endanger health or the environment is reported as follows:</p> <ul style="list-style-type: none"> <li>- orally within 24 h from the time the facility becomes aware of noncompliance</li> <li>- in writing within 5 days of the time the facility becomes aware of noncompliance.</li> </ul>
<b>10-11.</b> Even where not covered by NPDES permits, stormwater discharge on the facility should be uncontaminated and periodic surveillance of these discharges should be completed (GMP).	<p>Determine which drains at the facility are connected to the storm sewer and the location of all outfalls and discharge points.</p> <p>Determine if there is evidence of contamination (oil sheen, discoloration, etc.) by physical review of stormwater discharge sites.</p> <p>Verify that oil/water separators connected to the storm sewer on the facility are operating properly and correctly maintained.</p> <p>Determine if there is evidence of contaminated waste streams discharging to floor drains connected to the stormwater discharge system by checking major industrial shops or industrial areas physically, including:</p> <ul style="list-style-type: none"> <li>- battery shop</li> <li>- corrosion control</li> <li>- engine shop</li> <li>- motor pool</li> <li>- paint shop</li> <li>- plating shop</li> <li>- pesticide shop</li> <li>- petroleum, oil, and lubricant (POL) area.</li> </ul>



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>DISCHARGES TO POTW's/FEDERALLY OWNED TREATMENT WORKS (FOTW's)</b></p> <p><b>10-12.</b> Facilities must not discharge into a POTW any pollutant which would cause pass through or interference (40 CFR 403.5(a) and 403.5(c) (2)).</p> <p><b>10-13.</b> Facilities shall not introduce specific pollutants into a POTW (40 CFR 403.5(b)).</p>	<p>Determine the following:</p> <ul style="list-style-type: none"> <li>- what point source discharges are at the facility</li> <li>- what drains in the facility lead to the treatment works</li> <li>- what do personnel pour down the drains leading to the treatment works</li> <li>- what types of materials are located in areas where spills may reach the drains to the treatment works.</li> </ul> <p>Determine which drains are connected to the sanitary sewer draining to a POTW and possible pollutants entering these drains.</p> <p>Verify that the facility is not discharging to a POTW pollutants which would cause a pass through or interference (see definitions).</p> <p>Determine if the POTW has imposed any pretreatment standards or reporting requirements on the facility and verify that they are being met.</p> <p>Verify that pollutants which create a fire or explosion hazard in the POTW, including but not limited to waste streams with a closed cup flashpoint of less than 140 °F (60 °C) are not being discharged from the facility to a POTW.</p> <p>Verify that pollutants which will cause corrosive structural damage to the POTW are not being discharged from the facility to a POTW.</p> <p>Verify that in no case are discharges with a pH below 5.0 released.</p> <p>Verify that solid or viscous pollutants in amounts which will cause obstruction to the flow are not being discharged to the POTW. Examples are:</p> <ul style="list-style-type: none"> <li>- fish cleaning stations</li> <li>- pieces of metals, rubber, and wood from shops</li> <li>- sand and sediment.</li> </ul> <p>Verify that no pollutants, including oxygen demand pollutants, are released at a flow rate or concentration that will cause interference with the POTW.</p> <p>Verify that heat in amounts that would inhibit biological activity at the POTW resulting in interference is not discharged, including:</p> <ul style="list-style-type: none"> <li>- scrubber water</li> <li>- boiler blow down.</li> </ul>

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<p><b>10-13. (continued)</b></p>	<p>(NOTE: In no case will the temperature of discharges result in a temperature at the POTW of greater than 40 °C (104 °F).)</p> <p>Verify that petroleum, oil, nonbiodegradable cutting oil, or products of mineral oil origin is not discharged in amounts that would result in a pass through or interference (specifically check maintenance areas and oil/water separators).</p> <p>Verify that pollutants which would result in the presence of toxic gases, vapors, or fumes within the POTW in quantities that would cause acute worker health and safety problems are not discharged.</p> <p>Verify that no trucked or hauled pollutants are discharged except at discharge points designated by the POTW.</p> <p>Determine if the facility has been granted any exemptions or variances concerning its discharges.</p>
<p><b>10-14.</b> Facilities are required to notify the POTW immediately of any discharge, including slug loading, that could cause problems to the POTW (40 CFR 403.12(f)).</p>	<p>Verify that personnel at the facility are aware of the need to notify the POTW of any discharge that would cause problems.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>POTW/FOTW OPERATION</b></p> <p><b>10-15.</b> Personnel engaged or employed in operation and maintenance of water pollution control facilities must be trained in safety and occupational hazards (GMP).</p>	<p>Determine if periodic refresher training is conducted by interviewing operating/maintenance staff at plant.</p> <p>Verify that training is conducted by reviewing operating staff training records.</p>



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**DREDGING**

**10-16.** Department of the Army permits are required for the discharge of dredged or fill material into waters of the United States (33 CFR 323.3(a)(b)).

Determine if the facility has wetlands.

Verify that any activities involving dredging and filling wetlands are permitted by the Army Corps of Engineers.

(NOTE: Fill material means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a water body. The term does not include any pollutant discharged into the water primarily to dispose of waste, as that activity is regulated under Section 402 of CWA.)





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<p><b>EFFLUENT LIMITATIONS</b></p> <p><b>Feedlots</b></p> <p><b>10-17.</b> Feedlots, except those for ducks, are required to meet specific effluent limitation standards (40 CFR 412.12 through 412.16).</p>	<p>Determine if the facility operates a feedlot.</p> <p>Verify that there is no discharge of process wastewater pollutants to navigable waters.</p> <p>(NOTE: For existing sources, when best practicable control technology (BPT) currently available is used, process waste pollutants may be discharged to navigable waters whenever rainfall events, either chronic or catastrophic, cause an overflow of process wastewater from a facility designed, constructed, and operated to contain all process generated wastewaters plus the runoff from a 10-yr, 24-h rainfall event for the location of the point source. If the best available technology economically achievable is used it is a 25-yr, 24-h rainfall event.)</p> <p>(NOTE: For new sources, process waste pollutants may be discharged to navigable waters whenever rainfall events, either chronic or catastrophic, cause an overflow of process wastewater from a facility designed, constructed, and operated to contain all process generated wastewaters plus the runoff from a 25-yr, 24-h rainfall event for the location of the point source.)</p> <p>Verify that for existing sources the following pretreatment standard is met for discharge to a POTW:</p> <ul style="list-style-type: none"> <li>- fecal coliform: no irritation</li> <li>- BOD5: no irritation.</li> </ul>



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<p><b>EFFLUENT LIMITATIONS</b></p> <p><b>Steam Electric Power Generating Sources</b></p> <p><b>10-18.</b> Facilities that have steam electric power generating point sources are subject to certain point source effluent limitations (40 CFR 423.12(b)(1) through 423.12(b)(2) and 423.12(b)(12)).</p> <p><b>10-19.</b> Facilities that have steam electric power generating point sources are subject to certain point source effluent limitations (40 CFR 423.12(b)(3) through 423.12(b)(7) and 423.12(b)(12)).</p>	<p>Determine if the facility engages in the generation of electricity using fossil fuel sources and employing the steamwater system as the thermodynamic medium.</p> <p>Verify that the following limitations for steam generation point source effluent are met:</p> <ul style="list-style-type: none"> <li>- pH of all discharges, except once through cooling water, is in the range of 6.0 to 9.0</li> <li>- there is no discharge of PCB compounds.</li> </ul> <p>(NOTE: If waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property attributable to each contributing waste source are subject to the limitations listed here.)</p> <p>(NOTE: This applies to electricity power generating facilities utilizing fossil-type fuel or nuclear fuel in conjunction with a thermal cycle employing the steamwater system as the thermodynamic medium.)</p> <p>Verify that the quantity of pollutant discharged from low volume waste sources and in fly ash and bottom ash transport water do not exceed the quantity determined by multiplying the flow of either source times the concentration listed in Chart 1 of Appendix 10-1.</p> <p>Verify that the quantity of pollutants discharged in metal cleaning wastes do not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in Chart 2 of Appendix 10-1.</p> <p>Verify that the quantity of free available chlorine discharged in once through cooling water or in cooling tower blow down does not exceed the quantity determined by multiplying the flow of either source times the concentration listed below:</p> <ul style="list-style-type: none"> <li>- maximum concentration (mg/L) = 0.5</li> <li>- average concentration (mg/L) = 0.2.</li> </ul> <p>(NOTE: If waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property attributable to each contributing waste source are subject to the limitations listed here.)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-19. (continued)</b></p> <p><b>10-20.</b> Facilities discharging free available chlorine and total residual chlorine are subject to certain point source effluent limitations (40 CFR 423.12(b)(8) and 423.12(b)(12)).</p> <p><b>10-21.</b> Facilities discharging coal pile runoff are subject to certain point source effluent limitations (40 CFR 423.12(b)(9) through 423.12(b)(11) and 423.12(b)(12)).</p> <p><b>10-22.</b> Facilities that have steam electric power generating point sources are subject to certain BAT point source effluent limitations (40 CFR 423.13(a), 423.13(d), 423.13(e), and 423.13(h)).</p>	<p>(NOTE: This applies to electricity power generating facilities utilizing fossil-type fuel or nuclear fuel in conjunction with a thermal cycle employing the steamwater system as the thermodynamic medium.)</p> <p>Verify that neither free available chlorine nor total residual chlorine are discharged from any unit for more than 2 h/day and not more than one unit in any plant discharges at a time unless permission to do so has been granted by the appropriate authority.</p> <p>(NOTE: If waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property attributable to each contributing waste source are subject to the limitations listed here.)</p> <p>Determine if the facility is discharging coal pile runoff.</p> <p>Verify that the maximum concentration for any time of total suspended solids (TSS) does not exceed 50 mg/L.</p> <p>(NOTE: If waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property attributable to each contributing waste source are subject to the limitations listed here.)</p> <p>Determine if the facility has steam electric power generating point sources.</p> <p>Verify that there is no discharge of PCB compounds.</p> <p>Verify that the quantity of pollutants discharged in cooling tower blow down do not exceed the quantity determined by multiplying the flow of cooling tower blow down times the concentrations listed in Chart 3 of Appendix 10-1.</p> <p>Verify that neither free available chlorine nor total residual chlorine is discharged from any unit for more than 2 h in any 1 day and not more than one unit at a time in any plant discharges these compounds, unless the utility has a permit to do so from the appropriate authority.</p> <p>Verify that the quantity of pollutants discharged in chemical metal cleaning wastes does not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration lists in Chart 4 of Appendix 10-1.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<b>10-22. (continued)</b>	<p>(NOTE: If waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property attributable to each contributing waste source are subject to the effluent limitations listed Here.)</p>
<b>10-23.</b> Facilities that have steam electric power generator facilities rated at a capacity of 25 or more Megawatts are subject to certain point source effluent limitations (40 CFR 423.13(b)).	<p>Determine if the facility has steam electric power generators rated at a capacity of 25 or more Megawatts.</p> <p>Verify that the quantity of total residual chlorine discharged in once through cooling water from each discharge point does not exceed the quantity determined by multiplying the flow of once through cooling water from each discharge point times a maximum concentration (mg/L) of 0.20.</p> <p>Verify that total residual chlorine is not discharged from any single generating unit for more than 2 h/day, unless permits to do so have been obtain from the appropriate authority.</p>
<b>10-24.</b> Facilities that have steam electric power generator facilities rated at a capacity of 25 or fewer Megawatts are subject to certain point source effluent limitations (40 CFR 423.13(c)).	<p>Determine if the facility has steam electric power generators rated at a capacity of 25 or fewer Megawatts.</p> <p>Verify that the quantity of free available chlorine discharged in once through cooling water does not exceed the quantity determined by multiplying the flow of once through cooling water sources times the concentration listed:</p> <ul style="list-style-type: none"> <li>- maximum concentration (mg/L) = 0.5</li> <li>- average concentration (mg/L) facility = 0.2.</li> </ul> <p>Verify that neither free available chlorine nor total residual chlorine is discharged from any unit for more than 2 h in any 1 day and not more than one unit at a time in any plant discharges these compounds, unless the utility has a permit to do so from the appropriate authority.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>New Steam Electric Power Generators</b></p> <p><b>10-25.</b> Facilities that have new steam electric power generator point sources are subject to New Source Performance Standards (NSPS) (40 CFR 423.15(a) through 423.15(d), 423.15(f), 423.15(j), and 423.15(n)).</p>	<p>Determine if the facility has any new steam electric power generator point sources.</p> <p>Verify that the quantity of pollutants discharged from low volume waste sources and bottom ash transport water do not exceed the quantity determined by multiplying the flow of these sources times the concentration listed in Chart 1 of Appendix 10-1.</p> <p>Verify that the quantity of pollutant discharged in chemical metal cleaning wastes does not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in Chart 5 in Appendix 10-1.</p> <p>Verify that there is no discharge of wastewater pollutants from fly ash transport water.</p> <p>Verify that the quantity of free available chlorine discharged in cooling tower blow down does not exceed the quantity determined by multiplying the flow of cooling tower blow down times the concentration listed below:</p> <ul style="list-style-type: none"> <li>- maximum concentration (mg/L) = 0.5</li> <li>- average concentration (mg/L) = 0.2.</li> </ul> <p>Verify that the quantity of pollutants discharged in cooling tower blow down does not exceed the quantity determined by multiplying the flow of cooling tower blow down times the concentration listed in Chart 3 of Appendix 10-1.</p> <p>(NOTE: If waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property attributable to each contributing waste source are subject to the limitations listed here.)</p> <p>Verify that the pH of all discharges, except once through cooling water, is within the range of 6.0 to 9.0.</p> <p>Verify that there is no discharge of PCBs.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-26.</b> Facilities that introduce pollutants from new sources into a POTW are subject to certain pretreatment standards (40 CFR 423.17).</p>	<p>Determine if the facility introduces pollutants from new sources into a POTW.</p> <p>Verify that there is no discharge of PCB compounds from new sources into POTWs.</p> <p>Verify that discharge of copper (total) in chemical metal cleaning wastes from new sources into POTWs does not exceed the concentration listed:</p> <p style="padding-left: 40px;">- maximum for 1 day (mg/L) = 1.0.</p> <p>Verify that pollutants discharge in cooling tower blow down from new sources does not exceed the concentration listed in Chart 7 of Appendix 10-1.</p> <p>Verify that there is no discharge of wastewater pollutants from fly ash transport water from new sources into POTWs.</p>
<p><b>10-27.</b> Facilities that have new steam electric power generator facilities having a total rated electric generating capacity of 25 or more Megawatts are subject to certain point source effluent limitations (40 CFR 423.15 (h)).</p>	<p>Determine if the facility has facilities having a total rated electric generating capacity of 25 or more Megawatts.</p> <p>Verify that the quantity of total residual chlorine discharged in once through cooling water from each discharge point does not exceed the quantity determined by multiplying the flow of once through cooling water from each discharge point times the concentration listed:</p> <p style="padding-left: 40px;">- maximum concentration (mg/L) = 0.20.</p> <p>Verify that total residual chlorine is not discharged from any single generating unit for more than 2 h/day, unless permitted to do so by the appropriate authority.</p> <p>(NOTE: Simultaneously multi-unit chlorination is permitted.)</p>

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<p><b>10-28.</b> Facilities that have new steam electric power generator facilities having a total rated electric generating capacity of 25 or fewer Megawatts are subject to certain point source effluent limitations (40 CFR 423.15(i)).</p>	<p>Determine if the facility has steam electric power generator facilities having a total rated electric generating capacity of 25 or fewer Megawatts.</p> <p>Verify that the quantity of free available chlorine discharge in once through cooling water does not exceed the quantity determined by multiplying the flow of once through cooling water sources times the concentration listed:</p> <ul style="list-style-type: none"> <li>- maximum concentration (mg/L) = 0.5</li> <li>- average concentration (mg/L) = 0.2.</li> </ul> <p>Verify that neither free available chlorine nor total residual chlorine is discharged at any one time, unless the utility has been permitted to do so by the appropriate authority.</p>
<p><b>10-29.</b> Facilities discharging coal pile runoff are subject to certain point source effluent limitations (40 CFR 423.15(k) and 423.15(n)).</p> <p><b>Existing Steam Electric Power Generators</b></p> <p><b>10-30.</b> Facilities that introduce pollutants from existing sources into a POTW are subject to certain pretreatment standards (40 CFR 423.16).</p>	<p>Determine if the facility has coal pile storage areas.</p> <p>Verify that the quantity of TSS discharged in coal pile runoff do not exceed the limitations listed:</p> <ul style="list-style-type: none"> <li>- NSPS effluent limitations for any time = not to exceed 50 mg/L.</li> </ul> <p>(NOTE: Any untreated overflow from facilities designed, constructed, and operated to treat the coal pile runoff resulting from a 10-yr, 24-h rainfall event is not subject to this limitation.)</p> <p>Determine if the facility introduced pollutants from existing sources into a POTW.</p> <p>Verify that there is no discharge of PCB compounds from existing sources into POTWs.</p> <p>Verify that copper (total) discharged in chemical metal cleaning wastes from existing sources into POTWs do not exceed the concentration listed:</p> <ul style="list-style-type: none"> <li>- maximum for 1 day (mg/L) = 1.0.</li> </ul> <p>Verify that the pollutants discharged in cooling tower blow down from existing sources into POTWs does not exceed the concentration listed in Chart 6 of Appendix 10-1.</p>



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>EFFLUENT LIMITATIONS</b></p> <p><b>Electroplating Point Sources</b></p> <p><b>10-31.</b> Facilities that have electroplating operations are subject to certain point source effluent limitations (40 CFR 413.01(a) through 413.01(c) and 413.04).</p> <p><b>10-32.</b> Facilities that have existing sources that introduce pollutants into a POTW that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from the electroplating of common metals, are subject to certain pre-treatment standards (40 CFR 413.10, 413.14(a), 413.14(b), and 413.14(f)).</p>	<p>Determine if the facility has electroplating operations.</p> <p>(NOTE: See Appendix 10-2 for similar but excepted operations.)</p> <p>Verify that pretreated pollutants standards are measured by determining the relevant subcategory from the corresponding daily and 4 day average values listed in Chart 1 in Appendix 10-2.</p> <p>Verify that where electroplating process wastewaters are combined with regulated wastewaters that have 30 day average standards, the corresponding 30 day average standard for electroplating is used.</p> <p>(NOTE: Electroplating of common metals refers to electroplating with copper, nickel, chromium, zinc, tin, lead, cadmium, iron, aluminum, or any combination of these.)</p> <p>Determine if the facility has existing sources that introduce pollutants into a POTW that discharges less than 38,000 L (10,000 gal) per calendar day of process wastewaters resulting from the electroplating of common metals.</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 2 of Appendix 10-2.</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p> <p>Verify that the sources wastewater TTO is limited to 4.57 mg/L maximum for any 1 day.</p>

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<p><b>10-33.</b> Facilities that have existing sources that introduce pollutants into a POTW that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from the electroplating of common metals, are subject to certain pretreatment standards (40 CFR 413.10, 413.14(a), 413.14(c) through 413.14(e), and 413.14(g)).</p>	<p>(NOTE: Electroplating of common metals refers to electroplating with copper, nickel, chromium, zinc, tin, lead, cadmium, iron, aluminum, or any combination of these.)</p> <p>Determine if the facility has existing sources that introduces pollutants into a POTW that discharges 38,000 L (10,000 gal) or more per calendar day of process wastewaters resulting from the electroplating of common metals.</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 3 of Appendix 10-2.</p> <p>(NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Chart 3 upon prior agreement between the facility and the POTW receiving the wastes.)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, that after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the limitation listed in Chart 4 of Appendix 10-2 are met.</p> <p>Verify that the sources wastewater TTO is limited to 2.13 mg/L maximum for any 1 day.</p>
<p><b>10-34.</b> Facilities that have existing sources that introduce pollutants into a POTW that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from chromating, phosphating or immersion plating on ferrous or nonferrous materials, are subject to certain pretreatment standards (40 CFR 413.50, 413.54(a), 413.54(b), and 413.54(f)).</p>	<p>Determine if the facility has existing sources that introduce pollutants into a POTW that discharges less than 38,000 L (10,000 gal) per calendar day of process wastewaters resulting chromating, phosphating or immersion plating on ferrous or nonferrous materials.</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 2 of Appendix 10-2.</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p> <p>Verify that the sources wastewater TTO is limited to 4.57 mg/L maximum.</p>

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<p><b>10-35.</b> Facilities that have existing sources that introduce pollutants into a POTW that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from chromating, phosphating, or immersion plating on ferrous or nonferrous materials, are subject to certain pretreatment standards (40 CFR 413.50, 413.54(a), 413.54(c) through 413.54(e), and 413.54(g)).</p>	<p>Determine if the facility has existing sources that introduce pollutants into a POTW that discharges 38,000 L (10,000 gal) or more per calendar day of process wastewaters resulting from chromating, phosphating, or immersion plating.</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 3 of Appendix 10-2.</p> <p>(NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Chart 3 upon prior agreement between the facility and the POTW receiving the wastes.)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, that after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the limitations listed in Chart 4 of Appendix 10-2 are met.</p> <p>Verify that the sources wastewater TTO is limited to 2.13 mg/L maximum for any 1 day.</p>
<p><b>10-36.</b> Facilities that have existing sources that introduce pollutants into a POTW that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from electroless plating, are subject to certain pretreatment standards (40 CFR 413.70, 413.74(a), 413.74(b), and 413.74(f)).</p>	<p>(NOTE: Electroless plating refers to electroless plating of a metallic layer on a metallic or nonmetallic substrate.)</p> <p>Determine if the facility has existing sources that introduce pollutants into a POTW that discharges less than 38,000 L (10,000 gal) per calendar day of process wastewaters resulting from the electroless plating.</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 2 of Appendix 10-2.</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p> <p>Verify that the sources wastewater TTO is limited to 4.57 mg/L maximum.</p>

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<p><b>10-37.</b> Facilities that have existing sources that discharge pollutants into a POTW that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from electroless plating, are subject to certain pretreatment standards (40 CFR 413.70, 413.74(a), 413.74(c) through 413.74(e), and 413.74 (g)).</p>	<p>(NOTE: Electroless plating refers to electroless plating of a metallic layer on a metallic or nonmetallic substrate.)</p> <p>Determine if the facility has existing sources that introduce pollutants into a POTW that discharges 38,000 L (10,000 gal) or more per calendar day of process wastewaters resulting from electroless plating.</p> <p>Verify that the sources wastewater meets the limitations listed in Chart 3 of Appendix 10-2.</p> <p>(NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Chart 3 upon prior agreement between the facility and the POTW receiving the wastes.)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, that after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the limitations listed in Chart 4 of Appendix 10-2 are met.</p> <p>Verify that the sources wastewater TTO is limited to 2.13 mg/L maximum for any 1 day.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>EFFLUENT LIMITATIONS</b></p> <p><b>Metal Finishing Point Sources</b></p> <p><b>10-38.</b> Facilities that have shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacture are subject to certain point source effluent limitation (40 CFR 433.10 through 433.12(c)).</p> <p><b>10-39.</b> Facilities that have shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacture are subject to certain BPT point source effluent limitation (40 CFR 433.13).</p>	<p>Determine if the facility has shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacture.</p> <p>(NOTE: If any of the listed processes are performed, then refer to Appendix 10-3 for an additional listing of process operations subject to limitations under this regulation.)</p> <p>Verify that self-monitoring of cyanide is conducted after cyanide treatment and before dilution with other streams.</p> <p>Verify that the pollutants discharged from metal finishing point sources meets the limitations listed in Chart 1 of Appendix 10-3.</p> <p>Verify that oil and grease does not exceed the following:</p> <ul style="list-style-type: none"> <li>- maximum for any 1 day of 52 mg/L</li> <li>- monthly average of 26 mg/L.</li> </ul> <p>Verify that total suspended solids (TSS) does not exceed the following:</p> <ul style="list-style-type: none"> <li>- maximum for any 1 day of 60 mg/L</li> <li>- monthly average of 31 mg/L.</li> </ul> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance.</p>

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<p><b>10-40.</b> Facilities that have shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacture are subject to certain BAT point source effluent limitation (40 CFR 433.14).</p> <p><b>Existing Metal Finishing Point Sources</b></p>	<p>Determine if the facility has shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacture.</p> <p>Verify that the pollutants in discharge from metal finishing point sources meet the limitations listed in Chart 1 of Appendix 10-3.</p> <p>(NOTE: Alternately, if the facility does cyanide treatment and if permitted by the appropriate authority, the following amenable limits may apply for cyanide:</p> <ul style="list-style-type: none"> <li>- maximum for any 1 day = 0.86 mg/L</li> <li>- maximum monthly average = 0.32 mg/L.)</li> </ul> <p>Verify that the facility does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p>
<p><b>10-41.</b> Facilities that introduce pollutants from existing metal finishing point sources into POTWs are subject to certain pretreatment standards (40 CFR 433.15).</p>	<p>Determine if the facility introduces pollutants from existing metal finishing point sources into POTWs.</p> <p>Verify that pollutants introduced from existing metal finishing point sources (except from job shops and independent printed circuit board manufacturers) into POTW meet the standards listed in Chart 1 of Appendix 10-3.</p> <p>(NOTE: Alternately, if the facility does cyanide treatment and if permitted by the appropriate authority, the following amenable limits may apply for cyanide:</p> <ul style="list-style-type: none"> <li>- maximum for any 1 day = 0.86 mg/L</li> <li>- maximum monthly average = 0.32 mg/L.)</li> </ul> <p>Verify that the facility does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p> <p>Verify that any existing source subject to the criteria listed here meets the daily maximum pretreatment standard for TTO of 4.57 mg/L.</p>

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<p><b>New Metal Finishing Point Sources</b></p> <p><b>10-42.</b> Facilities that introduce pollutants from new metal finishing point sources into POTW are subject to certain performance standards (40 CFR 433.16).</p> <p><b>10-43.</b> Facilities that introduce pollutants from new metal finishing point sources into POTW are subject to certain pretreatment standards (40 CFR 433.17).</p>	<p>Determine if the facility introduces pollutants from new metal finishing point sources into POTW.</p> <p>Verify that pollutants introduced from new metal finishing point sources into POTW meet the standards listed in Chart 2 of Appendix 10-3.</p> <p>(NOTE: Alternately, if the facility does cyanide treatment and if permitted by the appropriate authority, the following amenable limits may apply for cyanide:</p> <ul style="list-style-type: none"> <li>- maximum for any 1 day = 0.86 mg/L</li> <li>- maximum monthly average = 0.32 mg/L.)</li> </ul> <p>Verify that the facility does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p> <p>Determine if the facility introduces pretreated pollutants from new metal finishing point sources into POTW.</p> <p>Verify that the pretreated pollutants introduced from new metal finishing point sources into POTW meet the standards listed in Chart 3 of Appendix 10-3.</p> <p>(NOTE: Alternately, if the facility does cyanide treatment and if permitted by the appropriate authority, the following amenable limits may apply for cyanide:</p> <ul style="list-style-type: none"> <li>- maximum for any 1 day = 0.86 mg/L</li> <li>- maximum monthly average = 0.32 mg/L.)</li> </ul> <p>Verify that the facility does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations.</p>





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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>LAND APPLICATION OF SLUDGE</b></p> <p><b>General</b></p> <p><b>10-44.</b> Representative samples of sewage sludge applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator are required to be collected and analyzed (40 CFR 503.8).</p> <p><b>10-45.</b> Depending on when the last time bulk sewage sludge subject to the cumulative loading rates in Appendix 10-4 was last applied to a site, land application may or may not be allowed to continue (40 CFR 503).</p>	<p>(NOTE: Checklist items 10-44 through 10-91 apply only to sludge generated during the treatment of domestic sewage in a treatment works. For exclusions see the definition of the term excluded sludge.)</p> <p>Determine if the facility applies sewage sludge to the land, places it on a surface disposal site, or fires it in a sewage sludge incinerator.</p> <p>Verify that the sludge is analyzed prior to application, placement, or firing for the following:</p> <ul style="list-style-type: none"> <li>- enteric viruses</li> <li>- fecal coliforms</li> <li>- helminth ova</li> <li>- inorganic pollutants</li> <li>- salmonella bacteria</li> <li>- specific oxygen uptake rate (SOUR)</li> <li>- total, fixed, and volatile solids.</li> </ul> <p>Verify that personnel contacted the permitting authority in the state to determine if bulk sewage sludge which has to meet the standards in Appendix 10-4 has been applied to the site since 20 July 1993.</p> <p>(NOTE: If sludge subject to these standards has not been applied to the site since 20 July 1993, the cumulative amount for each pollutant in Appendix 10-4 may be applied.)</p> <p>Verify that if bulk sewage sludge subject to these standards has been applied since 20 July 1993 and the cumulative amount of each pollutant applied to the site is known, the known cumulative amount is used to determine the additional amount of each pollutant that can be applied.</p> <p>(NOTE: If the cumulative amount is not known, there shall be no further application to the site.)</p>

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<p><b>10-46.</b> Bulk sewage sludge or sewage sludge sold or given away in a bag or other container must meet specific standards (40 CFR 503.10(e), 503.10(f), 503.13(a)(1), 503.13(a)(4), and 503.14(e)).</p>	<p>Verify that, if the facility gives or sells bulk sewage sludge or sewage sludge in a bag or other container, it meets the pollutant concentration limits in Appendix 10-5.</p> <p>Verify that, if the facility gives or sells bulk sewage sludge in a bag or other container, it meets one of the following:</p> <ul style="list-style-type: none"> <li>- pollutant concentrations do not exceed Appendix 10-6</li> <li>- the product of the concentration of each pollutant in the sewage sludge and the annual whole sludge application rate for the sewage sludge does not cause the annual pollutant loading rates in Appendix 10-7 to be exceeded.</li> </ul> <p>Verify that a label is affixed to the bag or container or an information sheet provided to the person who receives the sewage sludge.</p> <p>Verify that the label or information sheet states:</p> <ul style="list-style-type: none"> <li>- the name and address of the person who prepared the sewage sludge</li> <li>- a statement that the application to land is prohibited except in accordance with the instructions on the label or information sheet</li> <li>- the annual whole sludge application rate for the sewage sludge that does not cause any exceedence of the annual pollutant loading rates in Appendix 10-7.</li> </ul>

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**10-46. (continued)**

(NOTE: When sewage sludge or material derived from sewage sludge is sold or given away in a bag or other container and meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the labeling requirements:

- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:
  - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.
  - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.
- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]
- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]
- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h
- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials
- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-47.</b> The application of bulk sewage sludge is not permitted in specific circumstances (40 CFR 503.10(b), 503.10(c), and 503.14(a) through 503.14(c)).</p>	<p>Verify that bulk sewage sludge is not applied to the land if it is likely to adversely threaten an endangered species or its designated critical habitat.</p> <p>Verify that bulk sewage sludge is not applied to agricultural land, forest, a public contact site, or reclamation site that is flooded, frozen, or snow covered so that the bulk sewage sludge enters a wetland or other waters of the United States.</p> <p>Verify that bulk sewage sludge is not applied to agricultural land, forest, or a reclamation site that is 10 m [32.81 ft] or less from waters of the United States unless allowed by the permitting authority.</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20° C [68° F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
10-47. (continued)	<ul style="list-style-type: none"> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>
10-48. Bulk sewage sludge applied to agricultural land, forest, a public contact site, or a reclamation site must meet specific standards (40 CFR 503.12(b), 503.13(a)(2), and 503.14(d)).	<p>Verify that the cumulative loading rate for each pollutant does not exceed the limits outlined in Appendix 10-4.</p> <p>Verify that the concentration of each pollutant in the sewage sludge does not exceed the concentration for the pollutant in Appendix 10-6.</p> <p>Verify that bulk sewage sludge is applied at a whole sludge application rate that is equal to or less than the agronomic rate for the bulk sewage sludge unless otherwise specified by a permitting authority.</p>

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10-48. (continued)	<p>(NOTE: When bulk sewage sludge is applied to the land that meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the requirements concerning Appendix 10-4 and the agronomic rate application:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-49.</b> Bulk sewage sludge applied to a lawn or home garden must not contain pollutants in excess of the limits in Appendix 10-6 (40 CFR 503.13(a)(3)).</p> <p><b>10-50.</b> The annual application rate for domestic septage applied to agricultural land, forest or a reclamation site must not exceed specific limits (40 CFR 503.12(c) and 503.13(c)).</p>	<p>Verify that if bulk sewage sludge is applied to a lawn or home garden it does not contain pollutants in excess of the limits in Appendix 10-6.</p> <p>Verify that the annual application rate for domestic septage applied to agricultural lands, forest or a reclamation site do not exceed the annual application rate calculated using the following equation;</p> $AAR = \frac{N}{0.0026}$ <p>AAR = Annual application rate in gallons per acre per 365 day period  N = amount of nitrogen in pounds per acre per 365 day period needed by the crop or vegetation grown on the land.</p>

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<p><b>Vectors and Pathogens</b></p> <p><b>10-51.</b> Bulk sewage sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for pathogens (40 CFR 503.15(a)(1), 503.32 (a), and 503.32(b)).</p>	<p>Verify that the sewage sludge meets the Class A or the Class B pathogen requirements (see Definitions) and the following site restrictions:</p> <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge</li> <li>- animals are not allowed to graze for 30 days after application</li> <li>- turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority</li> <li>- public access to land with a high potential for public exposure is restricted for 1 yr after application</li> <li>- public access to land with a low potential for public exposure is restricted for 30 days after application.</li> </ul>



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<p><b>10-52.</b> Bulk sewage sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for vector attraction reduction (40 CFR 503.15(c)(1) and 503.33(b)(1) through 503.33(b)(10)).</p>	<p>Verify that one of the following vector reduction requirements are met:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C. [86 and 98.6 °F] When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40° C [104° F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials</li> </ul>

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<p><b>10-52. (continued)</b></p>	<ul style="list-style-type: none"> <li>- sewage sludge is injected below the surface of the land:               <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge applied to or placed on the land within 8 h after being discharged from a pathogen treatment process.</li> </ul>
<p><b>10-53.</b> Bulk sewage sludge applied to a lawn or home garden must meet the Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15(a)(2), 503.32 (a), and 503.33(b)(1) through 503.33(b)(8)).</p>	<p>Verify that for bulk sewage sludge the Class A pathogen requirements (see Definitions) are met.</p> <p>Verify that one of the following vector reduction requirements are met:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. if this cannot be done:               <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> </ul>

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<b>10-53. (continued)</b>	<ul style="list-style-type: none"> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>
<b>10-54. Sewage sludge that is sold or given away in a bag or container must meet Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15(a)(3), 503.32(a), and 503.33(b)(1) through 503.33(b)(8)).</b>	<p>Verify that for sewage sludge that is sold or given away in a bag or container, it meets the Class A pathogen requirements (see Definitions).</p> <p>Verify that one of the following vector reduction requirements are met:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent</li> <li>- a 17 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an anaerobically digested sewage sludge and the vector reduction attraction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]</li> <li>- a 15 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an aerobically digested sewage sludge and the vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has percent solids of 2 percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F]</li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer and the temperature is higher than 40 °C [104 °F] and the average temperature of the sewage sludge is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-55.</b> Domestic septage that is applied to agricultural land, forest, or a reclamation site must meet specific pathogen requirements and vector reduction requirements (40 CFR 503.15(b), 503.15(d), 503.32(c)(1), 503.32(c)(2), 503.33(b)(9), 503.33(b)(10), and 503.33(b)(12)).</p>	<p>Verify that one of the following requirements is met for pathogen control:</p> <ul style="list-style-type: none"> <li>- the pH of the domestic septage is raised to 12 or higher by alkali addition, remaining 12 or higher for 30 min, and the following land restrictions are met: <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge</li> </ul> </li> <li>- site restrictions are followed: <ul style="list-style-type: none"> <li>- food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil</li> <li>- food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil</li> <li>- food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge</li> <li>- animals are not allowed to graze for 30 days after application</li> <li>- turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority</li> <li>- public access to land with a high potential for public exposure is restricted for 1 yr after application</li> <li>- public access to land with a low potential for public exposure is restricted for 30 days after application.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
10-55. (continued)	<p>Verify that one of the following vector attraction reduction requirements is met:</p> <ul style="list-style-type: none"> <li>- sewage sludge is injected below the surface of the land:             <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process.</li> <li>- the pH of domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>Notifications</b></p> <p><b>10-56.</b> Persons who prepare bulk sewage sludge are required to provide specific notifications (40 CFR 503.10(b), 503.12(f), and 503.12(g)).</p>	<p>Verify that if the facility prepare bulk sewage sludge, it provides the person applying the bulk sewage sludge the notices and necessary information needed to comply with the land application regulations.</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>

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**REGULATORY  
REQUIREMENTS**

**10-57.** Persons who prepare bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site are required to provide users written notification of the total nitrogen on a dry weight basis (40 CFR 503.12(d)).

**REVIEWER CHECKS**

Determine if the facility prepares sewage sludge for application to agricultural land, forest, a public contact site, or a reclamation site.

Verify that the facility provides users with written notification of the total nitrogen on a dry weight basis.

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-58.</b> Persons who apply bulk sewage sludge to the land are required to provide notice to the land owner or lease holder (40 CFR 503.10(b), 503.10(c), and 503.12 (h)).</p>	<p>Verify that notice is given that includes the information needed to verify compliance with the land application regulations.</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-59.</b> Facilities that prepare bulk sewage sludge that is used in a different state are required to provide written notice (40 CFR 503.12(i)).</p> <p><b>10-60.</b> Facilities that apply bulk sewage sludge subject to the cumulative loading rates in Appendix 10-4 are required to provide written notice prior to the initial application of the sludge (40 CFR 503.10(b), 503.10(c), and 503.12(j)).</p>	<p>Determine if the facility prepares sewage sludge for land application that is used in another state.</p> <p>Verify that written notification is prepared and provided to the permitting authority in the state of application that includes the following:</p> <ul style="list-style-type: none"> <li>- the location of each land application site</li> <li>- the approximate time period bulk sewage sludge will be applied to the site</li> <li>- the name, address, telephone number, and NPDES permit number (if appropriate) for the facility preparing the sludge</li> <li>- the name, address, telephone number, and NPDES permit number (if appropriate) for the facility applying the sludge.</li> </ul> <p>Verify that prior to the initial application of bulk sewage sludge that is subject to the cumulative loading rates in Appendix 10-4, notice is provided to the permitting authority for the state that includes:</p> <ul style="list-style-type: none"> <li>- the location of the land application site</li> <li>- the name, address, telephone number, NPDES permit number (if appropriate) of the facility applying the sludge.</li> </ul> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-60. (continued)</b></p>	<ul style="list-style-type: none"> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.)</li> </ul>
<p><b>Monitoring</b></p> <p><b>10-61.</b> Monitoring for the limitations in Appendices 10-4 through 10-7, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements must be done according to the frequency in Appendix 10-8 (40 CFR 503.16 (a)).</p>	<p>Verify that monitoring for the limitations in Appendices 10-4 through 10-7, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements is done according to the frequency in Appendix 10-8.</p> <p>(NOTE: After the sewage sludge has been monitored for 2 yr, the permitting authority may reduce the frequency of monitoring.)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p>10-62. In specific instances, when domestic sewage is applied to agricultural land, forest, or a reclamation site, each container of domestic septage applied to the land is required to be monitored for compliance (40 CFR 503.16 (b)).</p>	<p>Verify that each container of domestic septage is monitored if the pH has been raised to 12 or higher by alkali addition, and kept there for 30 min.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>Recordkeeping and Reporting</b></p> <p><b>10-63.</b> When bulk sewage sludge is applied to the land or sold in a bag or container and it meets the requirements in Appendix 10-6, Class A pathogen requirements, and vector attraction reduction requirements, specific recordkeeping requirements must be met (40 CFR 503.17(a)(1)).</p>	<p>Determine if the facility applies bulk sewage sludge or sells or gives it away in a bag or container.</p> <p>Verify that it meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<b>10-63. (continued)</b>	<p>Verify that the following information is retained for 5 yr:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-6</li> <li>- a statement certifying which for of vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul>
<p><b>10-64.</b> When the facility derives material from sewage sludge for application and/or to sell or give away in a bag or container and it meets the requirements in Appendix 10-6, Class A pathogen requirements, and vector attraction reduction requirements, specific recordkeeping requirements must be met (40 CFR 503.17(a)(2)).</p>	<p>Determine if the facility derives material from bulk sewage sludge or sells or gives away material derived from sewage sludge in a bag or container.</p> <p>Verify that it meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<b>10-64. (continued)</b>	<ul style="list-style-type: none"> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul> <p>Verify that the following information is retained for 5 yr:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-6</li> <li>- a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul>
<b>10-65.</b> When the bulk sewage sludge that meets the limitations in Appendix 10-6, the requirements concerning Class A pathogens, the vector attraction reduction requirements and is applied to agricultural land, forest, a public contact site, or reclamation site specific reporting requirements must be met (40 CFR 503.17(a)(3)).	<p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site.</p> <p>Verify that it meets the requirements in Appendix 10-6, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done:             <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F]</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
10-65. (continued)	<ul style="list-style-type: none"> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h</li> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.</li> </ul> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-6</li> <li>- a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul> <p>Verify that the following information is retained for 5 yr by the person who applies the sludge:</p> <ul style="list-style-type: none"> <li>- a statement certifying that appropriate management practices and application procedures are being used</li> <li>- a description of how required management practices are implemented</li> <li>- a description of how the vector reduction requirements are met.</li> </ul>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-66.</b> When the bulk sewage sludge that meets the limitations in Appendix 10-6, the requirements concerning Class B pathogens, and is applied to agricultural land, forest, a public contact site, or reclamation site specific reporting requirements must be met (40 CFR 503.17(a)(4)).</p>	<p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site.</p> <p>Verify that it meets the requirements in Appendix 10-6 and Class B pathogen requirements (see definitions).</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-6</li> <li>- a statement certifying which for of vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class B pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met when it is used.</li> </ul> <p>Verify that the following information is retained for 5 yr by the person who applies the sludge:</p> <ul style="list-style-type: none"> <li>- a statement certifying that appropriate management practices and application procedures are being used</li> <li>- a description of how required management practices are implemented</li> <li>- a description of how site restrictions are being met</li> <li>- a description of how the vector reduction requirements are met when they are used.</li> </ul>
<p><b>10-67.</b> When bulk sewage sludge that meets the limitations in Appendix 10-4, is applied to agricultural land, forest, a public contact site, or reclamation site specific reporting requirements must be met (40 CFR 503.17(a)(5)).</p>	<p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site or reclamation site.</p> <p>Verify that it meets the requirements in Appendix 10-4.</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-4</li> <li>- a statement certifying which for of vector attraction reduction is being used and that pathogen requirements are being met</li> <li>- a description of how the pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met when used.</li> </ul>



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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-67. (continued)</b></p>	<p>Verify that the following information is retained indefinitely by the person who applies the sludge:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-4</li> <li>- the number of hectares in each site upon which bulk sewage sludge is applied</li> <li>- the date and time bulk sewage sludge is applied to each sites</li> <li>- the cumulative amount of each pollutant from Appendix 10-4 in the bulk sewage sludge applied to each site</li> <li>- amount applied to each site</li> <li>- a certification statement indicating that required information for each site has been obtained</li> <li>- a description of how the requirements to obtain information were met.</li> </ul> <p>Verify that the following information is retained for 5 yr by the person applying the sludge:</p> <ul style="list-style-type: none"> <li>- a statement certifying that appropriate management practices and application procedures are being used</li> <li>- a description of how required management practices are implemented</li> <li>- a certification statement that Class B pathogen requirements are being met</li> <li>- a description of how site restrictions are being met</li> <li>- certification statement that vector reduction requirements are met</li> <li>- a description of how vector reduction requirements are being met.</li> </ul>
<p><b>10-68.</b> When bulk sewage sludge is given away or sold in a bag or container and it meets the requirements in Appendix 10-7 specific recordkeeping requirements must be met (40 CFR 503.17(a)(6)).</p>	<p>Determine if the facility sells or gives bulk sewage sludge away in a bag or container.</p> <p>Verify that it meets the requirements in Appendix 10-7.</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge:</p> <ul style="list-style-type: none"> <li>- the annual whole sludge application rate for the sewage sludge that does not cause the annual pollutant rates in Appendix 10-7 to be exceeded</li> <li>- the concentration of each pollutant listed in Appendix 10-7</li> <li>- a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul>

<b>COMPLIANCE CATEGORY</b> <b>WASTEWATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<b>10-69.</b> When domestic septage is applied to agricultural land, forest, or a reclamation site specific reporting requirements must be met (40 CFR 503.17 (b)).	<p>Determine if the facility applies domestic septage to agricultural land, forest, a public contact site or reclamation site.</p> <p>Verify that the following information is retained for 5 yr by the person who applies the domestic septage:</p> <ul style="list-style-type: none"> <li>- the location of each site on which domestic septage is applied</li> <li>- the number of acres in each site on which domestic septage is applied</li> <li>- the date and time of application at each site</li> <li>- the nitrogen requirements for the crop or vegetation grown on each site during a 365 day period</li> <li>- the rate in gallons per acre per 365 day period at which domestic septage is applied to each site</li> <li>- a statement certifying which vector attraction reduction is being used and that pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul>
<b>10-70.</b> Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day], and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.18).	<p>Verify that the following information is submitted to the permitting authority by 19 February of each year:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-6</li> <li>- a statement certifying which for of vector attraction reduction is being used and that Class A pathogen requirements are being met</li> <li>- a description of how the Class A pathogen requirements are being met</li> <li>- a description of how the vector attraction reduction is being met.</li> </ul> <p>Verify that the following information is submitted on 19 February of each year when 90 percent or more of any of the cumulative loading rates in Appendix 10-4 is met:</p> <ul style="list-style-type: none"> <li>- the concentration of each pollutant listed in Appendix 10-4</li> <li>- the number of hectares in each site upon which bulk sewage sludge is applied</li> <li>- the date and time bulk sewage sludge is applied to each sites</li> <li>- the cumulative amount of each pollutant from Appendix 10-4 in the bulk sewage sludge applied to each site</li> <li>- amount applied to each site</li> <li>- a certification statement indicating that required information for each site has been obtained</li> <li>- a description of how the requirement to obtain information were met.</li> </ul>

**COMPLIANCE CATEGORY  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>SURFACE DISPOSAL OF SLUDGE</b></p> <p><b>General</b></p> <p><b>10-71.</b> An active sewage sludge unit that is located within 60 m [196.85 ft] of a fault that has displacement in Holocene time; located in an unstable area; or located in a wetland is required to close by 19 February 1994 (40 CFR 503.22(b)).</p> <p><b>10-72.</b> The facility is required to submit a written closure and post-closure plan that meets specific requirements to the permitting authority 180 days prior to the date of closure (40 CFR 503.22(c)).</p>	<p>(NOTE: The requirements concerning surface disposal of sludge do not apply to sewage sludge stored on the land or to the land on which sewage sludge is stored. It also does not apply to sewage sludge that remains on the land for longer than 2 yr when the facility who prepares the sewage sludge demonstrates that the land on which the sewage sludge remains is not an active sewage sludge unit. It also does not apply to sewage treated on the land or to the land on which the sewage sludge is treated (40 CFR 503.20(b) and 503.20(c)).)</p> <p>Determine if the facility has a sewage sludge unit that is located within 60 m [196.85] of a fault that has displacement in Holocene time; located in an unstable area; or is located in a wetland.</p> <p>Verify that the unit will be closed by 19 February 1994 unless otherwise stipulated by the permitting authority.</p> <p>Determine if the facility is planning on closing an active sewage sludge unit or has recently closed a sewage sludge unit.</p> <p>Verify that the closure and post-closure plan was submitted to the permitting authority at least 180 days in advance of closure and the plan contained the following:</p> <ul style="list-style-type: none"> <li>- a discussion of how the leachate collection system will be operated and maintained for 3 yr after closure if the unit has a liner and leachate collection system</li> <li>- a description of the system used to monitor for methane gas in the air in any structure within the surface disposal site and in the air at the property line</li> <li>- a discussion of how public access will be restricted for 3 yr after closure.</li> </ul> <p>Verify that if there are plans to turn the surface disposal site over to another owner, the facility notifies the subsequent owner that sewage sludge was placed on the land.</p>

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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-73.</b> Active sewage sludge units without a liner and leachate collection system are required to meet specific standards (40 CFR 503.23(a)(1) and 503.23(b)).</p>	<p>Verify that following concentrations are not exceeded in sewage sludge placed on an active sewage sludge unit:</p> <ul style="list-style-type: none"> <li>- arsenic: 73 mg/kg</li> <li>- chromium: 600 mg/kg</li> <li>- nickel: 420 mg/kg.</li> </ul> <p>(NOTE: Amounts are based on a dry weight basis.)</p>
<p><b>10-74.</b> Active sewage sludge units without a liner and leachate collection system with a boundary less than 150 m [492.13 ft] from the property line of the surface disposal site are required to meet specific requirements (40 CFR 503.23(a)(2) and 503.23(b)).</p>	<p>Verify that the concentration of each pollutant listed in Appendix 10-9 are not exceeded in relation to the listed distances.</p> <p>(NOTE: At the time of the permit application, the owner/operator of the site may ask for site specific pollutant limits.)</p>
<p><b>10-75.</b> Sewage sludge units are required to be operated according to specific operation and management standards (40 CFR 503.24).</p>	<p>Verify that sewage sludge is not placed in an active sewage sludge unit if it is likely to adversely affect a threatened or endangered species or its critical habitat.</p> <p>Verify that active sewage sludge units:</p> <ul style="list-style-type: none"> <li>- do not restrict the flow of a base flood</li> <li>- is located 60 m [196.85 ft] or more from a fault that has displacement in Holocene time, unless otherwise specified by the permitting authority</li> <li>- is not located in an unstable area</li> <li>- it will not contaminate an aquifer</li> <li>- is not located in a wetland unless by permit.</li> </ul> <p>(NOTE: The results of a groundwater monitoring program developed by a qualified groundwater scientist or a certification by a qualified groundwater scientist will be used to demonstrate that sewage sludge placed on an active sewage sludge unit does not contaminate an aquifer.)</p> <p>Verify that when a surface disposal site is located in a seismic impact zone, the unit is designed to withstand the maximum recorded horizontal ground level acceleration.</p>

**COMPLIANCE CATEGORY  
WASTEWATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
10-75. (continued)	<p>Verify that for runoff the following occurs:</p> <ul style="list-style-type: none"> <li>- the runoff is collected and disposed of in accordance with an NPDES permit</li> <li>- the runoff collection system has the capacity to handle runoff from a 24-h, 25-yr storm event.</li> </ul> <p>Verify that leachate is handled so that:</p> <ul style="list-style-type: none"> <li>- the leachate collection system for an active sewage sludge unit that has a liner and leachate collection system is operated and maintained during the period the sewage sludge unit is active and for 3 yr thereafter</li> <li>- leachate from an active sewage sludge unit that has a liner and a leachate collection system is collected and disposed of in accordance with the applicable requirements from when the unit is active and for 3 yr thereafter.</li> </ul> <p>Verify that the following occurs when a cover is placed on a sewage sludge unit:</p> <ul style="list-style-type: none"> <li>- the concentration of methane gas in the air in any structure within the surface disposal site of an active unit does not exceed 25 percent of the lower explosive limit for methane gas during the period that the unit is active and the concentration of the methane gas in air at the property line of the surface disposal site do not exceed the lower explosive limit for methane gas during the period that the sewage sludge unit is active</li> <li>- the concentration of methane gas at closure when the final cover is placed in air in any structure within any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit for methane gas for 3 yr after the unit closes and the concentration of methane gas in air at the property line of the unit does not exceed the lower explosive limit for methane gas 3 yr after closure unless otherwise specified by the permitting authority.</li> </ul> <p>Verify that a food or feed crop or a fiber crop are not grown on an active sewage sludge unit unless it has been demonstrated to the permitting authority that through management practices public health and the environment are protected from any reasonably anticipated adverse effects.</p> <p>Verify that animals are not grazed on an active sewage sludge unit unless it has been demonstrated to the permitting authority that through management practices public health and the environment are protected from any reasonably anticipated adverse effects.</p>

<b>COMPLIANCE CATEGORY</b> <b>WASTEWATER MANAGEMENT</b> <b>Fish and Wildlife Service</b>	
<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<b>10-75. (continued)</b>	Verify that public access is restricted for the period that the surface disposal site contains an active unit and for 3 yr after the last active sewage sludge unit in the surface disposal site closes.
<b>10-76.</b> Class A or one of the Class B pathogen requirements (see definitions) must be met when placing sewage sludge on an active sewage sludge unit unless it is covered with soil or other material at the end of each operating day (40 CFR 503.25(a)).	Determine if the sewage sludge meets Class A or one of the Class B pathogen requirements.  Verify that if the sludge does not meet pathogen requirements, it is covered with soil or other material at the end of each operating day.

**COMPLIANCE CATEGORY  
WASTEWATER MANAGEMENT  
Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-77.</b> Vector attraction reduction must be done when sewage sludge or domestic septage is placed on an active sewage sludge unit (40 CFR 503.25(b) and 503.25(c)).</p>	<p>Verify that when sewage sludge is placed on an active sewage sludge unit one of the following vector attraction reduction requirements is done:</p> <ul style="list-style-type: none"> <li>- the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> <li>- for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved.</li> <li>- for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [86 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved.</li> </ul> </li> <li>- the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [86 °F]</li> <li>- sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F]</li> <li>- the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h</li> </ul>

**COMPLIANCE CATEGORY**  
**WASTEWATER MANAGEMENT**  
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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
10-77. (continued)	<ul style="list-style-type: none"> <li>- the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials</li> <li>- the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials sewage sludge is injected below the surface of the land:             <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process.</li> </ul> </li> <li>- the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day.</li> </ul> <p>Verify that when domestic septage is placed on an active sewage sludge unit one of the following vector attraction reduction requirements is done:</p> <ul style="list-style-type: none"> <li>- sewage sludge is injected below the surface of the land:             <ul style="list-style-type: none"> <li>- no significant amount of the sewage sludge is present on the land surface within 1 h after injection</li> <li>- when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process</li> </ul> </li> <li>- sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process.</li> <li>- the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day</li> <li>- the pH of the domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min.</li> </ul>



**COMPLIANCE CATEGORY**  
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**Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>Monitoring and Documentation</b></p> <p><b>10-78.</b> Monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit must be done according to the frequency in Appendix 10-8 (40 CFR 503.26(a)).</p> <p><b>10-79.</b> If, when domestic septage is placed on an active sewage sludge unit, the pH of the septage is raised to 12 or higher by alkali addition and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage must be monitored (40 CFR 503.26(b)).</p> <p><b>10-80.</b> In specific circumstances, air in structures within a surface disposal site and at property lines of the surface disposal site are required to be monitored continuously for methane gas (40 CFR 503.26(c)).</p>	<p>Verify that monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit is done according to the frequency in Appendix 10-8.</p> <p>(NOTE: The permitting authority may reduce the frequency of monitoring.)</p> <p>Verify that when domestic septage is placed on an active sewage sludge unit, the pH of the septage is raised to 12 or higher by alkali addition and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage is monitored.</p> <p>Verify that continuous monitoring occurs during the period that the surface disposal site contains an active sewage sludge unit on which the sewage sludge is covered and for 3 yr after a unit closes when a final cover is placed on the sewage sludge.</p>

**COMPLIANCE CATEGORY  
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Fish and Wildlife Service**

<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-81.</b> Specific record-keeping requirements must be met when sewage sludge, other than domestic septage) is placed on an active sewage sludge unit (40 CFR 503.27(a)).</p>	<p>Verify that the person who prepares sewage sludge retains the following information for 5 yr:</p> <ul style="list-style-type: none"> <li>- the concentration of arsenic, chromium, and nickel in the sludge</li> <li>- a statement certifying that pathogen and vector attraction reduction requirements are being met</li> <li>- a description of how the pathogen requirements are being met when done</li> <li>- a description of how the vector attraction reduction requirements are being met when done.</li> </ul> <p>Verify that the operator of the surface disposal site retains the following for 5 yr:</p> <ul style="list-style-type: none"> <li>- the concentrations of the pollutants listed in Appendix 10-9</li> <li>- a statement certifying that management practices and vector attraction reduction requirement are being met</li> <li>- a description of how the management practices are being met</li> <li>- a description of how the vector attraction reduction requirements are being met when they are done.</li> </ul>
<p><b>10-82.</b> Specific record-keeping requirements must be met when domestic septage is placed on an active sewage sludge unit (40 CFR 503.27(b)).</p>	<p>Verify that the person who applies domestic septage with a pH of greater than 12 retains the following information for 5 yr:</p> <ul style="list-style-type: none"> <li>- a statement certifying that vector attraction reduction requirements are being met</li> <li>- a description of how the vector attraction reduction requirements are being met when done.</li> </ul> <p>Verify that the operator of the surface disposal site retains the following for 5 yr:</p> <ul style="list-style-type: none"> <li>- a statement certifying that management practices and vector attraction reduction requirement are being met</li> <li>- a description of how the management practices are being met</li> <li>- a description of how the vector attraction reduction requirements are being met when they are done.</li> </ul>

**COMPLIANCE CATEGORY  
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Fish and Wildlife Service**

**REGULATORY  
REQUIREMENTS**

**10-83.** Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day], and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority on 19 February of each year (40 CFR 503.28).

**REVIEWER CHECKS**

Verify that the following information is submitted to the permitting authority on 19 February of each year:

- the concentration of arsenic, chromium and nickel in the sludge
- a statement certifying that management practices and pathogen and vector attraction reduction requirements are being met
- a description of how the pathogen requirements are being met when done
- a description of how the vector attraction reduction requirements are being met when done
- the concentrations of the pollutants listed in Appendix 10-9
- a description of how the management practices are being met.



**COMPLIANCE CATEGORY  
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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>SLUDGE INCINERATION</b></p> <p><b>10-84.</b> Facilities with incinerators that fire sewage sludge must meet specific emissions standards (40 CFR 503.43(a) and 503.43(b)).</p> <p><b>10-85.</b> Sewage sludge being fed to an incinerator is required to meet specific concentration limitations for lead, arsenic, cadmium, and nickel (40 CFR 503.43 (c) and 503.43(d)).</p> <p><b>10-86.</b> The concentration of total hydrocarbons in the exit gas from a sewage sludge incinerator must meet specific limits (40 CFR 503.44).</p>	<p>Verify that incinerators that fire sewage sludge meet the requirements on beryllium and mercury emissions outlined in 40 CFR 61.30 through 61.34 and 61.50 through 61.56.</p> <p>Verify that the daily concentration of lead in sewage sludge fed to a sewage sludge incinerator does not exceed the concentration calculated using Formula 1 in Appendix 10-10.</p> <p>Verify that the daily concentration of arsenic, cadmium, chromium, and nickel do not exceed the concentrations calculated using Formula 2 in Appendix 10-10.</p> <p>Verify that the monthly average concentration for total hydrocarbons in the exit gas, corrected to 0 percent moisture using the correction factor from Formula 1 of Appendix 10-11 and to 7 percent oxygen using the correction factor from Formula 2 does not exceed 100 ppm on a volumetric basis.</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-87.</b> Sewage sludge incinerators are required to have continuous monitoring devices for hydrocarbons and oxygen in the exit gas, and a continuous monitoring for combustion temperature, as specified by the permitting authority (40 CFR 503.45(a) through 503.45 (f)).</p>	<p>Determine what the permitting authority has specified in terms of continuous monitors for combustion temperature, and hydrocarbons and oxygen in the exit gas.</p> <p>Verify that the required monitors are in place and operational.</p> <p>(NOTE: The requirement for continuous monitors for hydrocarbons is effective 19 February 1994 unless construction of new pollution control facilities is required, in which case the compliance date is 19 February 1995.)</p> <p>(NOTE: The requirements for monitors for total hydrocarbons does not apply if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the exit gas from a sewage sludge incinerator stack is monitored continuously for CO</li> <li>- the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis</li> <li>- the person who fires the sewage sludge incinerator retains the following information for 5 yr: <ul style="list-style-type: none"> <li>- the CO concentrations in the exit gas</li> <li>- a calibration and maintenance log for the instrument used to measure the CO concentration</li> </ul> </li> <li>- Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)</li> </ul>
<p><b>10-88.</b> Sewage sludge must not be fired in a sewage sludge incinerator if it is likely to affect a threatened or endangered species (40 CFR 503.45 (g)).</p>	<p>Determine if the facility has any endangered or threatened species which might be affected by the firing of the incinerator.</p>
<p><b>10-89.</b> Monitoring for arsenic, chromium, lead, and nickel shall be done at the frequency outlined in Appendix 10-8 (40 CFR 503.46).</p>	<p>Verify that monitoring is done at the frequency outlined in Appendix 10-8.</p> <p>(NOTE: After 2 yr of monitoring the permitting authority might reduce the required frequency.)</p> <p>(NOTE: Beryllium, mercury, and air pollution control device operating parameters will be monitored at the frequency designated by the permitting authority.)</p>

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<b>REGULATORY REQUIREMENTS</b>	<b>REVIEWER CHECKS</b>
<p><b>10-89. (continued)</b></p>	<p>(NOTE: The requirements for monitors for total hydrocarbons does not apply if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the exit gas from a sewage sludge incinerator stack is monitored continuously for CO</li> <li>- the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis</li> <li>- the person who fires the sewage sludge incinerator retains the following information for 5 yr: <ul style="list-style-type: none"> <li>- the CO concentrations in the exit gas</li> <li>- a calibration and maintenance log for the instrument used to measure the CO concentration</li> </ul> </li> <li>- Class I sludge management facilities, POTWs with a design flow rate equal to or greater than one million gal per day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)</li> </ul>
<p><b>10-90.</b> Individuals who fire sewage sludge in an incinerator are required to keep specific information on file for 5 yr (40 CFR 503.47).</p>	<p>Verify that the following information is kept on file for 5 yr:</p> <ul style="list-style-type: none"> <li>- the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator</li> <li>- the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack</li> <li>- information that indicates the National Emissions Standards for beryllium and mercury are met</li> <li>- the combustion temperatures, including the maximum combustion temperature for the incinerator</li> <li>- values for the air pollution control device operating parameters</li> <li>- the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack</li> <li>- the sewage sludge feed rate</li> <li>- the stack height for the incinerator</li> <li>- the dispersion factor for the site where the incinerator is located</li> <li>- the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator</li> <li>- the risk specific concentrations for chromium</li> <li>- a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature.</li> </ul>

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REGULATORY REQUIREMENTS	REVIEWER CHECKS
<p><b>10-90. (continued)</b></p>	<p>(NOTE: The requirements for recordkeeping for total hydrocarbons does not apply if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- the exit gas from a sewage sludge incinerator stack is monitored continuously for CO</li> <li>- the monthly average concentration of CO in the exit gas from a sewage sludge incinerator stack, corrected for zero percent moisture and to 7 percent oxygen, does not exceed 100 ppm on a volumetric basis</li> <li>- the person who fires the sewage sludge incinerator retains the following information for 5 yr: <ul style="list-style-type: none"> <li>- the CO concentrations in the exit gas</li> <li>- a calibration and maintenance log for the instrument used to measure the CO concentration</li> </ul> </li> <li>- Class I sludge management facilities, POTWs with a design flow rate equal to or greater than one million gal per day, and POTWs that serve a population of 10,000 people or greater submit the monthly average CO concentrations in the exit gas to the permitting authority on 19 February of each year.)</li> </ul>
<p><b>10-91. Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1,000,000 gal/day [3,785,412 L/day], and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.46).</b></p>	<p>Verify that the following information pertaining to incinerators is submitted to the permitting authority by 19 February of each year:</p> <ul style="list-style-type: none"> <li>- the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator</li> <li>- the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack</li> <li>- information that indicates the National Emissions Standards for beryllium and mercury are met</li> <li>- the combustion temperatures, including the maximum combustion temperature for the incinerator</li> <li>- values for the air pollution control device operating parameters</li> <li>- the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack</li> <li>- the sewage sludge feed rate</li> <li>- the stack height for the incinerator</li> <li>- the dispersion factor for the site where the incinerator is located</li> <li>- the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator</li> <li>- the risk specific concentrations for chromium</li> <li>- a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature.</li> </ul>



## Appendix 10-1

### Steam Electric Power Generating Point Sources

Chart 1

Pollutant or pollutant property	BPT and NSPS Effluent Limitations	
	Maximum for any 1 day (mg/L)	Maximum average values for 30 consecutive days (mg/L)
TSS	100.0	30.0
Oil and Grease	20.0	15.0
From 40 CFR 423.12(b)(3), 423.12(b)(4), 423.15(c) and 423.15(f)		

Chart 2

Pollutant or pollutant property	BPT Effluent Limitations	
	Maximum for any 1 day (mg/L)	Maximum average values for 30 consecutive days (mg/L)
TSS	100.0	20.0
Oil and Grease	20.0	15.0
Copper, total	1.0	1.0
Iron, total	1.0	1.0
From 40 CFR 423.12(b)(5) and 423.12(b)(6)		

BAT = best available technology

BPT = best practicable control technology

NSPS = new source performance standards

(continued)

## Appendix 10-1 (continued)

### Chart 3

Pollutant or pollutant property	BAT and NSPS Effluent Limitations	
	Maximum for any 1 day (mg/L)	Maximum average values for 30 consecutive days (mg/L)
The 126 priority pollutants (see next page) contained in chemicals added for cooling tower maintenance, except	( <sup>1</sup> )	( <sup>1</sup> )
Chromium total	0.2	0.2
Zinc, total	1.0	1.0
<sup>1</sup> No detectable amount		
From 40 CFR 423.13(d)(1) and 423.16(j)(1)		

### Chart 4

Pollutant or pollutant property	BAT Effluent Limitations	
	Maximum for any 1 day (mg/L)	Maximum average values for 30 consecutive days (mg/L)
Copper total	1.0	1.0
Iron, total	1.0	1.0
From 40 CFR 423.13(e)		

(continued)

## Appendix 10-1 (continued)

### Chart 5

Pollutant or pollutant property	NSPS Effluent Limitations	
	Maximum for any 1 day (mg/L)	Maximum average values for 30 consecutive days (mg/L)
TSS	100.0	30.0
Oil and Grease	20.0	15.0
Copper, total	1.0	1.0
Iron, total	1.0	1.0
From 40 CFR 423.12(b)(3) and 423.12(b)(4)		

### Chart 6

Pollutant or Pollutant Property	PSES Effluent Limitations Maximum for any time (mg/L)
The 126 priority pollutants (see next page) contained in chemicals added for cooling tower maintenance, except:	( <sup>1</sup> )
Chromium, total	0.2
Zinc, total	1.0
<sup>1</sup> No detectable amount	
From 40 CFR 423.16(d)(1)	

**PSES = pretreatment standard for existing sources**

(continued)

## Appendix 10-1 (continued)

### Chart 7

Pollutant or Pollutant Property	PSES Effluent Limitations Maximum for any time (mg/L)
The 126 priority pollutants (see next page) contained in chemicals added for cooling tower maintenance, except:	( <sup>1</sup> )
Chromium, total	0.2
Zinc, total	1.0
<sup>1</sup> No detectable amount	
From 40 CFR 423.17(d)(1)	

### The 126 Priority Pollutants

Acenaphthene
Acrolein
Acrylonitrile
Benzens
Benzidine
Carbon tetrachloride (tetrachloromethane)
Chlorobenzene
1,2,4-Trichlorobenzene
Hexachlorobenzene
1,2-Dichloroethane
1,1,2-Trichloroethane
1,1,2,2-Tetrachloroethane
Chloroethane
Bis (2-chloroethyl)ether
2-Chloroethyl vinyl ether (mixed)
2-Chloronaphthalene
2,4,6-Trichlorophenol
Parachlormeta-cresol

(continued)

## Appendix 10-1 (continued)

Chloroform (trichloromethane)  
2-Chlorophenol  
1,2-Dichlorobenzene  
1,3-Dichlorobenzene  
1,4-Dichlorobenzene  
3,3-Dichlorobenzidine  
1,1-Dichloroethylene  
1,2-Trans-dichloroethylene  
2,3-Dichlorophenol  
1,2-Dichloropropane  
1,3-Dichloropropylene (1,3-dichloropropene)  
2,4-Dimethylphenol  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
1,2-Diphenylhydrazine  
Ethylbenzene  
Fluoranthene  
4-Chlorophenyl phenyl ether  
4-Bromophenyl phenyl ether  
Bis (2-chloroisopropyl) ether  
Bis (2-chloroethoxy) methane  
Methylene Chloride (dichloromethane)  
Methyl chloride (chloromethane)  
Methyl bromide (bromomethane)  
Bromoform (tribromomethane)  
Dichlorobromomethane  
Chlorodibromomethane  
Hexachlorobutadiene  
Hexachlorocyclo[octadiene]  
Isophorone  
Naphthalene  
Nitrobenzene

(continued)

## Appendix 10-1 (continued)

2-Nitrophenol  
4-Nitrophenol  
2,4-Dinitrophenol  
4,6-Dinitro-o-cresol  
N-nitrosodimethylamine  
N-nitrosodiphenylamine  
N-nitrosodi-n-propylamine  
Pentachlorophenol  
Phenol  
Bis (2-ethylhexyl) phthalate  
Butyl benzyl phthalate  
Di-n-butyl phthalate  
Di-n-octyl phthalate  
Diethyl phthalate  
Dimethyl phthalate  
1,2-Benzanthracene (benzo(a)anthracene)  
Benzo(a)pyrene (3,4-benzopyrene)  
3,4-Benzofluoranthene (benzo(b)fluoranthene)  
11,12-Benzofluoroanthene (benzo(k)fluoranthene)  
Chrysens  
Acenaphthylene  
Anthracene  
1,12-Benzoperylene (benzo(gh)perylene)  
Fluorene  
Phenanthrene  
1,2,5,6-Dibenzanthracene (dibenso(a,h)anthracene)  
Indeno(1,2,3-cd) pyrene (2,3-o-phenylene pyrene)  
Pyrene  
Tetrachloroethylene  
Toluene  
Trichloroethylene  
Vinyl chloride (chloroethylene)

(continued)

## Appendix 10-1 (continued)

Aldrin  
Dieldrin  
Chlordane (technical mixture and metabolites)  
4,4-DDT  
4,4-DDE (p,p-DDX)  
4,4-DDD (p,p-TDE)  
Alpha-endosulfa  
Beta-endosulfan  
Endosulfan sulfate  
Endrin  
Endrin aldehyde  
Heptachlor  
Heptachlor epoxide (BHC-hexachloro-cyclohexane)  
Alpha-BHC  
Beta-BHC  
Gamma-BHC  
Delta-BHC  
PCB-polychlorinated biphenyls  
PCB-1242 (arochlor 1242)  
PCB-1254 (Arochlor 1254)  
PCB-1221 (Arochlor 1221)  
PCB-1232 (Arochlor 1232)  
PCB 1248 (Srochlor 1248)  
PCB-1260 (Arochlor 1260)  
PCB-1016 (Arochlor 1016)  
Toxaphene  
Antimony  
Arsenic  
Asbestos  
Beryllium  
Cadmium  
Chromium

(continued)

## Appendix 10-1 (continued)

Copper

Cyanide, Total

Lead

Mercury

Nickel

Selenium

Silver

Thallium

Zinc

2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)



## Appendix 10-2

### Operations Excepted from Electroplating Point Source Effluent Limitations

Operations similar to electroplating but which are specifically excepted include:

1. electrowinning and electrorefining conducted as part of nonferrous metal smelting and refining
2. metal surface preparation and conversion coating conducted as part of coil coating
3. metal surface preparation and immersion plating or electroless plating conducted as part of porcelain enameling
4. electrodeposition of active electrode materials, electroimpregnation, and electroforming conducted as a part of battery manufacturing
5. metallic platemaking and gravure cylinder preparation conducted with or for printing and publishing facilities, and continuous strip electroplating conducted within iron and steel manufacturing facilities which introduce pollutants into a FOTW.

If the maximum for any 1 day is	and the 4 day average is	Then the 30 day average is
0.6	0.4	0.3
1.2	.7	.5
1.9	1	.55
4.1	2.6	1.8
4.2	2.6	1.8
4.2	2.6	1.8
4.5	2.7	1.8
5.0	2.7	1.5
7.0	4	2.5
10.5	6.8	5
20.0	13.4	10
23	16	12
47	29	20
53	36	27
74	39	21
107	65	45
169	89	49
160	100	70
From 40 CFR 413.04		

(continued)

## Appendix 10-2 (continued)

If the maximum for any 1 day is	and the 4 day average is	Then the 30 day average is
164	102	70
176	105	70
273	156	98
365	229	160
374	232	160
401	241	160
410	267	195
623	257	223
935	609	445

From 40 CFR 413.04

Pollutant or pollutant property	Maximum for any 1 day	Maximum average values for 4 consecutive days
CN,A	5.0	2.7
Pb	0.6	0.4
Cd	1.2	0.7

From 40 CFR 413.14(b), 413.54(b), and 413.74(b)

Pollutant or pollutant property	Maximum for any 1 day	Maximum average values for 4 consecutive days
CN,T	1.9	1.0
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0
Zn	4.2	2.6
Pb	0.6	0.4
Cd	1.2	0.7
Total metals	10.5	6.8

From 40 CFR 413.14(c), 413.54(c), and 413.74(c)

(continued)

## Appendix 10-2 (continued)

Pollutant or pollutant property	Maximum for any 1 day	Maximum average values for 4 consecutive days
CN,T	1.9	1.0
Pb	0.6	0.4
Cd	1.2	0.7
TSS	20.0	13.4
pH	*	*

\*Within the range 7.5 to 10.0  
From 40 CFR 413.14(e), 413.54(e), and 413.74(e)



# **Appendix 10-3** **Metal Finishing Point Sources**

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**Process Operations with Point Source Effluent Limitations**

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Nonferrous metal smelting and refining

Coil coating

Porcelain enameling

Battery manufacturing

Iron and steel

Metal casting foundries

Aluminum forming

Copper forming

Plastic molding and forming

Nonferrous forming

Electrical and electronic components

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**Chart 1 BAT**

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	(mg/L)	
Cadmium (T)	0.69	0.26
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	.....

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From 40 CFR 433.14(a) and 40 CFR 433.14(a)

(continued)

## Appendix 10-3 (continued)

**Chart 2 NSPS**

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	(mg/L)	
Cadmium (T)	0.11	0.07
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	.....
Oil and Grease	52.00	26.00
TSS	60.00	31.00
pH	*	*

\* Within 6.0 - 9.0

From 40 CFR 433.16(a)

**Chart 3 Pretreatment Standards for New Indirect Sources (PSNS)**

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	(mg/L)	
Cadmium (T)	0.11	0.07
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	.....

From 40 CFR 433.17(a)

#### **Appendix 10-4**

#### **Cumulative Pollutant Loading Rates for Sludge (40 CFR 503.13(b)(2))**

<b>Pollutant</b>	<b>Cumulative Pollutant Loading Rate (kg/hectare)</b>
Arſenic	41
Cadmium	39
Chromium	3000
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2600





## **Appendix 10-5**

### **Ceiling Concentrations for Sludge (40 CFR 503.13(b)(1))**

<b>Pollutant</b>	<b>Ceiling Concentration (mg/kg, dry weight basis)</b>
Arsenic	75
Cadmium	85
Chromium	3000
Copper	4300
Lead	640
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500



## **Appendix 10-6**

### **Pollutant Concentrations for Sludge (40 CFR 503.13(b)(3))**

<b>Pollutant</b>	<b>Monthly Average Concentrations (mg/kg, dry weight basis)</b>
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	36
Zinc	2800



## **Appendix 10-7**

### **Annual Pollutant Loading Rates (40 CFR 503.13(b)(2))**

<b>Pollutant</b>	<b>Annual Pollutant Loading Rates (kg/hectare/ 365 day period)</b>
Arsenic	2.0
Cadmium	1.0
Chromium	150
Copper	75
Lead	15
Mercury	0.85
Nickel	21
Selenium	5.0
Zinc	140



## Appendix 10-8

### Frequency of Monitoring - Land Application, Surface Disposal, and Incineration (40 CFR 503.16, Table 1, 503.26, Table 1, 503.46, Table 1)

<b>Amount of Sewage sludge* (metric tons/365 day period) [long ton/365 days]</b>	<b>Frequency</b>
Greater than zero but less than 290 [285.42]	Once per year
Equal to or greater than 290 [285.42] but less than 1500 [1476.31]	Once per quarter (four times per year)
Equal to or greater than 1500 [1476.31] but less than 15,000 [14,763.1]	Once per 60 days (six times less than 15,000 [14,763.1] per year)
Equal to or greater than 15,000 [14,763.1]	Once per month

\* Either the amount of bulk sewage sludge applied to the land or the amount of sewage sludge received by a person who prepares sewage sludge that is sold or given away in a bag or other container for application to the land (dry weight basis).





## Appendix 10-9

### Pollutant Concentrations for an Active Sewage Sludge Unit (40 CFR 503.23, Table)

Unit Boundary to Property Site	Pollutant Concentration <sup>1</sup>		
(Distance in meters)	Arsenic mg/kg	Chromium mg/kg	Nickel mg/kg
0 to less than 25	30	200	210
25 to less than 50	34	220	240
50 to less than 75	39	260	270
75 to less than 100	46	300	320
100 to less than 125	53	360	390
125 to less than 150	62	450	420

<sup>1</sup> Dry weight basis



## Appendix 10-10

### Lead Concentration in Sewage Sludge Fed to an Incinerator (40 CFR 503.43)

#### Formula 1:

$$C = \frac{0.1 \times \text{NAAQS} \times 86,400}{\text{DF} \times (1 - \text{CE}) \times \text{SF}}$$

Where:

C - Daily concentration of lead in sewage sludge in mg/kg of total solids (dry weight basis).

NAAQS - National ambient Air Quality Standards for lead in  $\mu\text{m}/\text{m}^3$ .

DF - Dispersion Factor in  $\mu\text{m}/\text{m}^3/\text{g/s}$ .

CW - Sewage sludge incinerator control efficiency for lead in hundreths.

SF - Sewage sludge feed rate in metric tons/day (dry weight basis).

#### Formula 2:

$$C = \frac{\text{RSC} \times 86,400}{\text{DF} \times (1 - \text{CE}) \times \text{SF}}$$

Where:

C - Daily concentrations of arsenic, cadmium, chromium, or nickel in sewage sludge in mg/kg of total solids (dry weights basis).

CE - Sewage sludge incinerator control efficiency for arsenic, cadmium, chromium, or nickel in hundreths.

DF - Dispersion Factor in  $\mu\text{m}/\text{m}^3/\text{g/s}$ .

RSC - Risk specific concentration in  $\mu\text{m}/\text{m}^3$ .

SF - Sewage sludge feed rate in metric tons/day (dry weight basis).



**Appendix 10-11**  
**Total Hydrocarbon Operational Standards**  
**(40 CFR 503.44)**

**Formula 1:**

$$\text{Corrective Factor (percent moisture)} = \frac{1}{(1 - X)}$$

Where:

X - decimal fraction of the percent moisture in the sewage sludge incinerator exit gas in hundredths

**Formula 2:**

$$\text{Corrective Factor (oxygen)} = \frac{14}{(21 - Y)}$$

Where:

Y - Percent oxygen concentration in the sewage sludge incinerator stack exit gas (dry volume/dry volume)

